

Cardiovascular surgery: Overview and outcomes



Legacy Health



Legacy's vision for cardiovascular care

Legacy provides cardiovascular services that:

- Produce superior outcomes
- Design care around the patient experience
- Integrate cardiovascular providers and clinical practices
- Optimize system performance

This report highlights some of the outstanding achievements and clinical outcomes of our heart surgery program at Legacy Good Samaritan Medical Center and Legacy Emanuel Medical Center, both in Portland, Ore., as well as Randall Children's Hospital at Legacy Emanuel, home of our pediatric heart surgery program.

A depth of experience — and excellence

For nearly 50 years, heart services at Legacy Health has been changing lives — and saving them.

Specializing in adult and pediatric cardiovascular surgery, our program unites the latest technology, the most highly skilled surgeons and a commitment to personalized care to achieve outcomes that exceed national standards.

Our experience enables us to treat the broadest range of individuals, from those needing a simple procedure to the most complex of cases. We employ the most sophisticated technology, including robotic surgery and a hybrid operating room, to improve outcomes. And each member of the Legacy team is here to ensure that every patient and family receives the personalized care they need every step of the way.

Supported by data, renowned by reputation and highly regarded by patients and physicians alike, Legacy Heart Services stands among the best in the Pacific Northwest.

Award-winning AMI

In recognition for its implementation of a higher standard of care for heart attack patients, Legacy Good Samaritan Medical Center has received the American College of Cardiology Foundation's National Cardiovascular Data Registry ACTION — Get With the Guidelines Gold Performance Achievement Award for 2010 and 2011.



This award signifies Legacy Good Samaritan's commitment to improving the treatment of acute myocardial infarction patients through the implementation of ACTION Registry-GWTG and in-hospital initiation of the American College of Cardiology/American Heart Association Clinical Guideline recommendations.

Results surpass national benchmarks

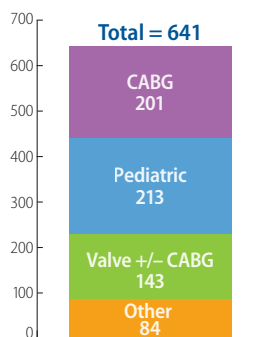
In the top 15 percent of hospitals nationally

Legacy Heart Services achieved outcomes that exceeded the Society of Thoracic Surgeons (STS) national standards, see below, in a significant range of areas. Among the highlights:

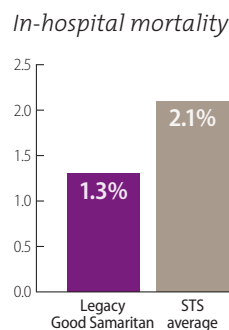
- Based on National Quality Forum measures, Legacy Good Samaritan received three stars for compliance with use of medications, placing it in the top 15 percent of hospitals in the country.
- For 2010, Legacy Good Samaritan outperformed the STS average with regard to both CABG and aortic valve replacement mortality rates, with no deaths in either group.
- Legacy Emanuel outperformed overall STS usage (95 percent) of internal mammary artery (IMA) with 100 percent compliance usage.

The Society of Thoracic Surgeons is a nonprofit organization representing more than 6,400 surgeons, researchers and allied health professionals around the world. The society established the STS National Database, which collects outcomes data, in 1989 as an initiative for quality improvement and patient safety. STS has also developed quality performance measures for adult cardiac, general thoracic, and congenital heart surgery. The information collected in the database has become a national benchmark for cardiac surgery.

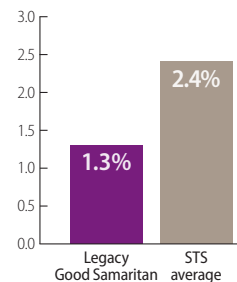
Volumes by type (Legacy Good Samaritan and Legacy Emanuel combined)



Mortality for major procedures, observed rate (CABG, valve and valve with CABG)



Operative mortality



641 total adult and pediatric CV surgeries performed at Legacy Health in 2010



“For decades, Legacy Heart Services has been committed to the best outcomes, the latest technology and true patient-centered care,” says Andrew Tsen, M.D., Medical Director of Cardiac Surgery for Legacy Health. “It’s what we are known for — and what we’re here for.”

Offering a full spectrum of specialized care

Legacy Heart Services has one of the region’s most comprehensive cardiovascular surgical programs, offering an array of adult and pediatric cardiovascular and thoracic procedures, from treatments and procedures for valve disease and congenital heart defects to atrial fibrillation and bloodless surgery. We offer:

- Bloodless surgery
- Cardiac valve replacement/repair
- Coronary artery bypass graft (CABG)
- Extracorporeal membrane oxygenation (ECMO)
- Endoscopic saphenous vein harvest
- MAZE procedure
- Minimally invasive cardiac valve repair/replacement
- Repair of congenital heart defects in adults
- Resection of cardiac tumors
- Thoracic aortic dissections and aneurysm repair
- Laser transmyocardial revascularization

Surgeons adopt advanced care

Latest tools and technology for best results

From robotic surgery and a hybrid operating room to the newest technologies in bloodless surgery, Legacy Health has long been on the leading edge of surgical innovation. We continually invest in our program to ensure that we are equipped with the latest tools and technologies, and our highly skilled surgeons specialize in the most advanced and innovative surgical procedures.

Robotic heart surgery — Since performing one of Oregon's first robotic mitral valve repairs in 2009 with the da Vinci Surgical System, Legacy has been a leader in minimally invasive robotic surgery. To date, more than 70 robotic heart surgery procedures have been performed at Legacy Good Samaritan. The advanced surgery has the potential to result in better patient outcomes with less blood loss, decreased pain, and shorter hospital stays and recovery times.

Our surgeons use da Vinci robotic technology for an array of cardiac procedures, most frequently mitral valve repair and replacement and closure of atrial septal defects.

Hybrid OR — Established in 2009, Legacy Good Samaritan's hybrid OR integrates a comprehensive cath lab within a cardiac operating room. The result brings interventional cardiology and cardiac surgery into one location, allowing patients to be treated by both surgeons and cardiologists without having to be moved from room to room or floor to floor.

Bloodless surgery — Established in 1991, Legacy's Bloodless Surgery and Medicine Program is the oldest and most experienced in the United States, yet we are constantly innovating. We utilize technologies such as acute normovolemic hemodilution, albumin, blood salvage, approved clotting factors, erythropoietin and a heart-lung machine to serve all specialties of both adult and pediatric medicine.

Valve replacement saves chaplain's life and gives him a shot at the Inside Passage

Tom Stoltey, 58, went to work on the morning of June 7, 2011, just like any other day. But a few hours later, an excruciating pain in his head jolted him from his desk.

"I felt like my head was going to blow off," says Stoltey, a medical center chaplain in Vancouver, Wash.

Coworkers called 9-1-1, and within minutes, Stoltey was on his way to Legacy Emanuel Medical Center. From the minute he arrived, Stoltey felt he was in good hands.

"Everybody just swarmed around me," he says. "They made me feel comfortable and secure, and that I was being taken care of."

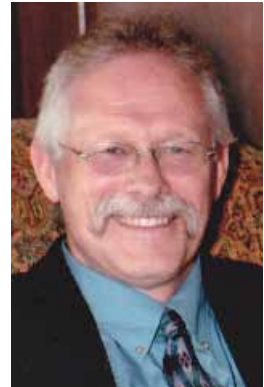
Doctors initially suspected a stroke, but a CT scan revealed a dissection of Stoltey's ascending aorta, the result of connective tissue disorder. Legacy surgeon Jonathan Hill, M.D., operated on Stoltey, replacing his aortic valve and about five inches of his ascending aorta.

Stoltey spent two days in the ICU and five more in the cardiac unit before heading home. He later went back to the hospital with bags of candy to hand out to the staff who had cared for him.

"My experience with the hospital was extraordinary," he says.

Though Stoltey has had to ease up a bit — he no longer splits six cords of wood a year like he used to — he still exercises regularly, lifts weights, and plays racquetball and golf. Married for 25 years and a father of four, Stoltey has also started a bucket list. Up at the top: kayaking the Inside Passage.

"That has always been my dream," he says, "and I'm not going to let this slow me down."



Legacy Good Samaritan's hybrid OR integrates a comprehensive cath lab with a cardiac operating room.

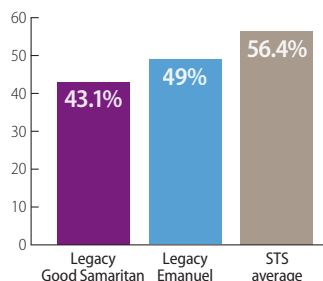
Expertise drives impressive CABG outcomes

Zero percent operative mortality for coronary bypass

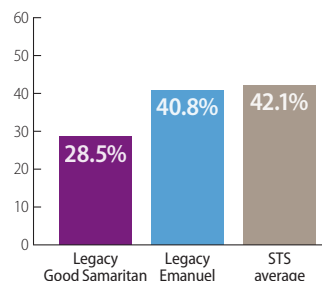
For decades, surgeons at Legacy Health have been successfully performing coronary artery bypass grafting (CABG). And while we take pride in our longevity, we also have continually adapted over the years, implementing new technology and procedures that have consistently improved our outcomes. Our commitment to quality has led to a decrease in the amount of blood products used, fewer reoperations, shorter ICU stays and more referrals to our rehabilitation services. The combined effect means lower costs, improved outcomes and better overall care.

In 2010, our operative mortality for CABG surgery at Legacy Good Samaritan was an impressive 0 percent, and our total ICU stay (greater than 24 hours) was below the STS benchmark at both Legacy Good Samaritan and Legacy Emanuel. We also exceeded STS standards in other areas, including intra/post-op blood products used and reoperation.

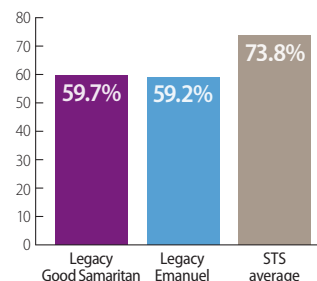
Intra-op/post-op products used



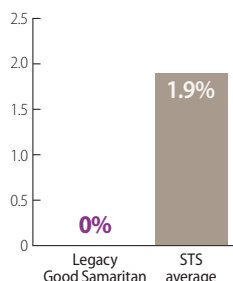
Post-op blood products used



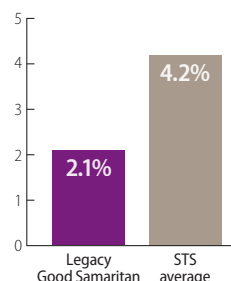
Total ICU stay greater than 24 hours



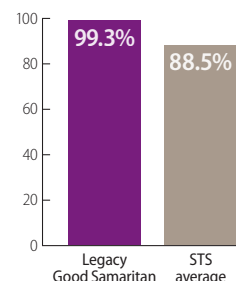
Operative mortality, risk-adjusted



Any reoperation, risk-adjusted



Cardiac rehabilitation referral





Our surgeons and cardiovascular staff realize that heart surgery care isn't limited to the operating room. We personalize care for the patients and families, while also focusing on communication with referring providers.



Life Flight Network In cardiac emergencies, time is of the essence. Since its original founding in 1978 as Emanuel Life Flight at Emanuel Hospital (now Legacy Emanuel Medical Center), the medical transport service Life Flight Network has quickly and safely transported thousands of patients to Legacy Health for emergency treatment. Because of this unique relationship with Life Flight, Legacy Emanuel has built a reputation as a regional leader in trauma care and for the speedy and successful treatment of cardiac emergencies.

Innovations lead valve surgery

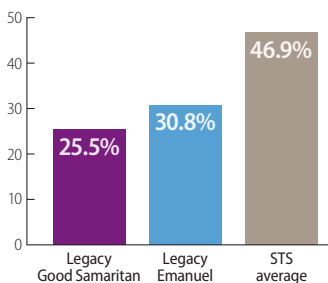
Pioneering use of robotic tools adds to reputation

A long history of experience and expertise has earned Legacy Health a reputation for excellence in repairing and replacing diseased valves. Our skilled surgeons routinely perform aortic valve replacement (more than 100 cases in 2010), as well as minimally invasive aortic and mitral valve procedures using robotic technology.

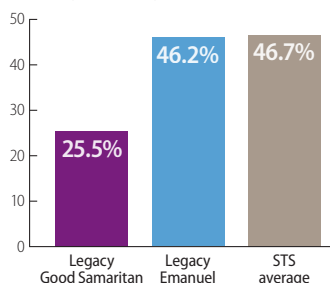
Emphasizing our commitment to the latest technology, in 2009 Legacy Health became one of the early adopters in the region to employ robotic surgery for mitral valve repair. The combination of experience and technological innovation has led to outcomes consistently exceeding national standards in such categories as blood products used, renal failure complication and operative mortality.

Isolated aortic valve replacement

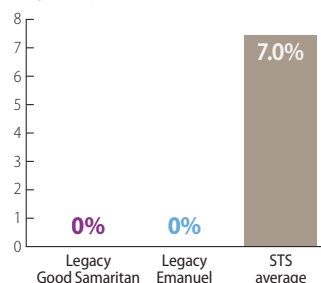
Intra-op/post-op products used



Post-op blood products used

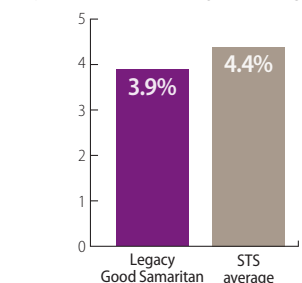


Any reoperation

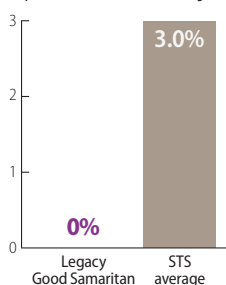


Aortic valve replacement and CABG

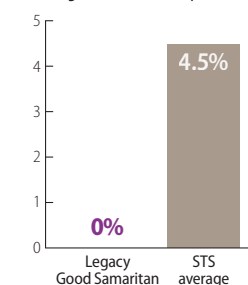
Operative mortality, risk-adjusted



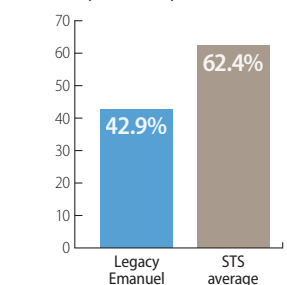
Operative mortality



Renal failure complication



Intra-op blood products used



Robotic surgery gets woman up and running fast

A mother and administrative assistant who lives in Vancouver, Wash., Kim McCartan felt as if she was doing just fine with a long-standing heart issue until her primary care doctor recommended she see a cardiologist.

Her cardiologist gave her these alarming words: "You've got to have open heart surgery. Your valve is leaking severely, and if you don't do this in two months, you could die."

Soon after, Kim had surgery, but it wasn't open heart. It was minimally invasive robotic surgery, performed by Andrew Tsen, M.D., at Legacy Good Samaritan.

A day after the surgery, Kim was up and walking around; four days later, she was home. Today she is running road races, and all that remains from her surgery are a few quarter-inch scars, a healthier heart and a big dose of gratitude. "I'm just blessed that I had this done," says Kim. "And blessed Dr. Tsen knows how to do it."



Legacy became one of the first systems in the region to use robotic surgery for mitral valve repair in 2009 and continues to employ the procedure when appropriate.

A new home for pediatric cardiac surgery

Experienced surgeons deliver patient care

At Legacy Health, we take immense pride in being a leading pediatric cardiac surgery program. Our approach to treating acquired and congenital heart diseases is an effective balance of advanced medicine and surgery with compassionate, family-centered care.

"With pediatric cardiac surgery, there is medical complexity as well as a huge emotional component with every patient," says John Iguidbashian, M.D., medical director, Children's Heart Program, Randall Children's Hospital at Legacy Emanuel. "At Legacy, we're able to balance the two."

Senior attending surgeons deliver the patient care, providing the highest level of care to patients and timely feedback to referring physicians.

Pediatric heart surgeries are performed at Legacy Emanuel Medical Center; children receive care at our dedicated facility for children — Randall Children's Hospital at Legacy Emanuel. The result is successful clinical outcomes — and families who are able to live healthier, happier lives together.

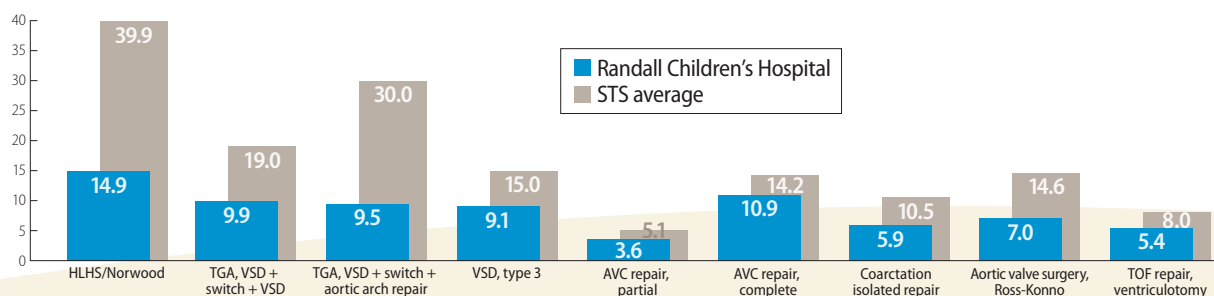
Extensive capabilities

Our capabilities in pediatric surgery encompass everything from common procedures to RACHS and EACTS surgeries, the highest risk congenital surgeries performed. Among our specialty areas:

- Septal defects, including atrial septal defect repair and complete atrial ventricular canal defect repair
- Cyanotic lesions, including hypoplastic left heart syndrome, transposition of the great arteries and tetralogy of Fallot repair and with pulmonary atresia
- Valvular disease, including aortic and mitral valve repair or replacement, tricuspid valve repair and sub-aortic membrane resection
- Palliative procedures, including Blalock-Taussig shunt, pulmonary artery band and atrial septectomy
- Aortic arch, including coarctation of the aorta repair, patent ductus arteriosus ligation and vascular ring repair

Discharge mortality	RCH	STS mean
All patients	3.3%	3.5%
RACHS-1 Category 5–6 (Risk Adjustment for Congenital Heart Surgery)	13.6%	17.4%
EACTS Category 5 (European Association for Cardio-Thoracic Surgery)	13.0%	17.1%
Neonates (0–30 days)	9.7%	10.1%
Neonates and infants (0 days–1 year)	5.2%	5.4%
Neonates, RACHS-1 Category 5–6 (risk adjustment for congenital heart surgery)	16.7%	18.3%
Neonates, EACTS Category 5	15.8%	18.4%

Length of stay (in days; Randall Children's Hospital vs. STS average)



Open-heart surgery helps 10-week-old get back to being a baby

Judging by the way Leyton Reese kicks and moves around like the healthy infant that she is, you'd never suspect she's already had open-heart surgery.

However, when she was just over 10 weeks old, that's exactly what she needed to stay alive.

Born in November 2011 in Alaska, Leyton was diagnosed with tetralogy of Fallot in early 2012. During a stent procedure at a hospital in Anchorage, Leyton's heart was accidentally punctured. She was transported to Randall Children's Hospital at Legacy Emanuel, where she was stabilized and ready for surgery four days later.

John Iguidbashian, M.D., medical director of the Children's Heart Program at Legacy, repaired the valve and the damage to her heart.

Now, Leyton's major heart ailments are behind her. "You'd never know she's had open-heart surgery," her mom, Andrea Reese, says.



Community physicians have relied on the pediatric expertise on the Legacy Emanuel campus for decades. That care has a new name and a new home in Randall Children's Hospital at Legacy Emanuel. The new home, which opened in February 2012, offers advanced medical care in a setting designed for better outcomes and a better experience for patients and their families.

Our surgeons

Legacy Emanuel Medical Center Legacy Good Samaritan Medical Center The Oregon Clinic Northwest Surgical Division

Robert DuBose, M.D.



Medical school: University of North Carolina School of Medicine
General surgery residency: University of Washington affiliated hospitals
Cardiothoracic surgery residency: Vanderbilt University Medical Center

Alan Martin, M.D.



Medical school: Indiana University School of Medicine
General surgery internship, residency and chief residency: Medical School of Ohio
Cardiac residency: University of Utah

Jonathan Hill, M.D.



Medical school: University of Southern California Medical School
Surgery internship and residency: Los Angeles County USC Medical Center
Research fellowship: Good Samaritan Children's Hospital of Los Angeles
Cardiothoracic surgery residency: University of California, San Diego

Andrew Tsen, M.D.



Medical school: University of Kansas School of Medicine
General surgery residency: University of Arizona Health Sciences Center
Cardiothoracic surgery residency: University of Arizona Health Sciences Center

John Lemmer, M.D.



Medical school: Oregon Health & Science University
General surgery internship, residency and chief residency: University of Michigan
Thoracic surgery research fellowship: University of Michigan

Cardiothoracic surgery residency: University of Michigan

Randall Children's Hospital at Legacy Emanuel

John Iguidbashian, M.D.



Medical school: Wayne State University School of Medicine
Internship: University of California, San Diego
Residency: University of California, Davis
Fellowship: Children's Memorial Hospital, Chicago

Hagop Hovaguimian, M.D.



Medical School: Aleppo University, Syria
Residency: Beekman Downtown Hospital, New York City
Fellowship: Oregon Health & Science University

To make a referral

To reach any of our surgeons at Legacy Emanuel or Legacy Good Samaritan, please call 503-226-6321. For more information, visit www.orclinic.com/clinic/northwestsurgical.

To reach the pediatric heart program at Randall Children's Hospital at Legacy Emanuel, please call 503-280-3418. For more information, visit www.legacyhealth.org/kidsonly.



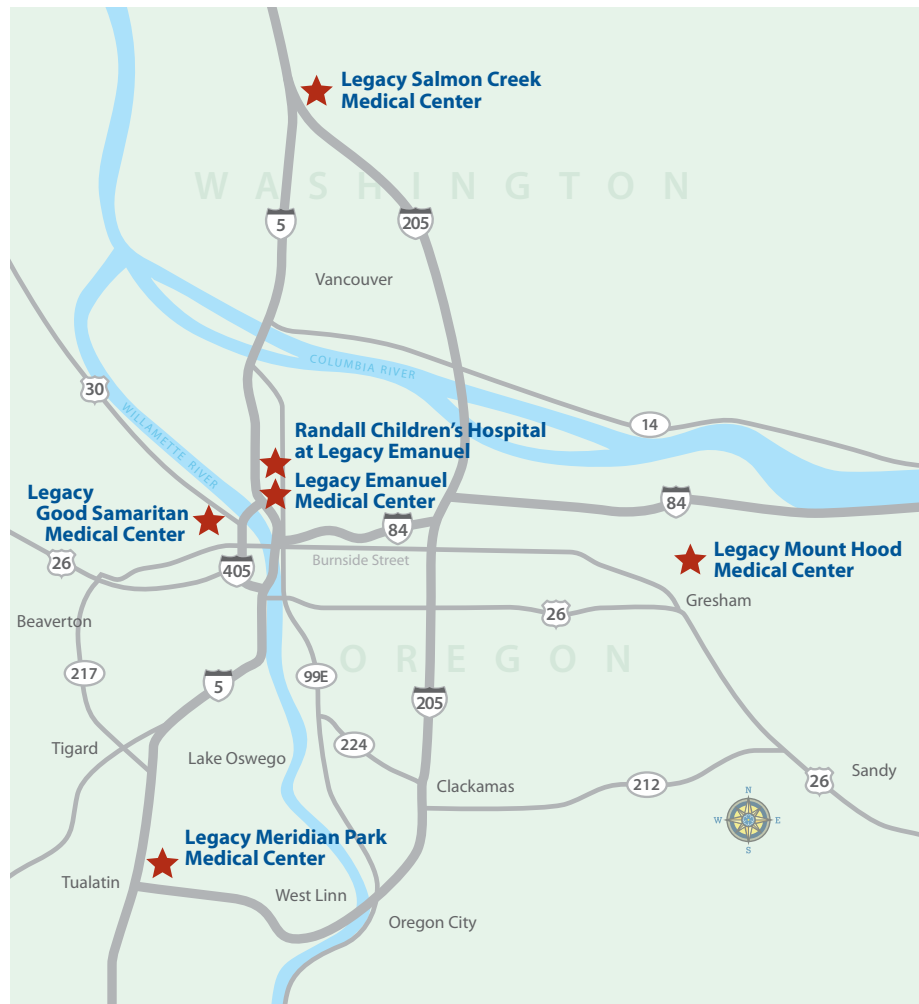
Randall Children's Hospital at Legacy Emanuel



Legacy Emanuel Medical Center



Legacy Good Samaritan Medical Center



Legacy Health

1919 N.W. Lovejoy St. • Portland, OR 97209

www.legacyhealth.org

