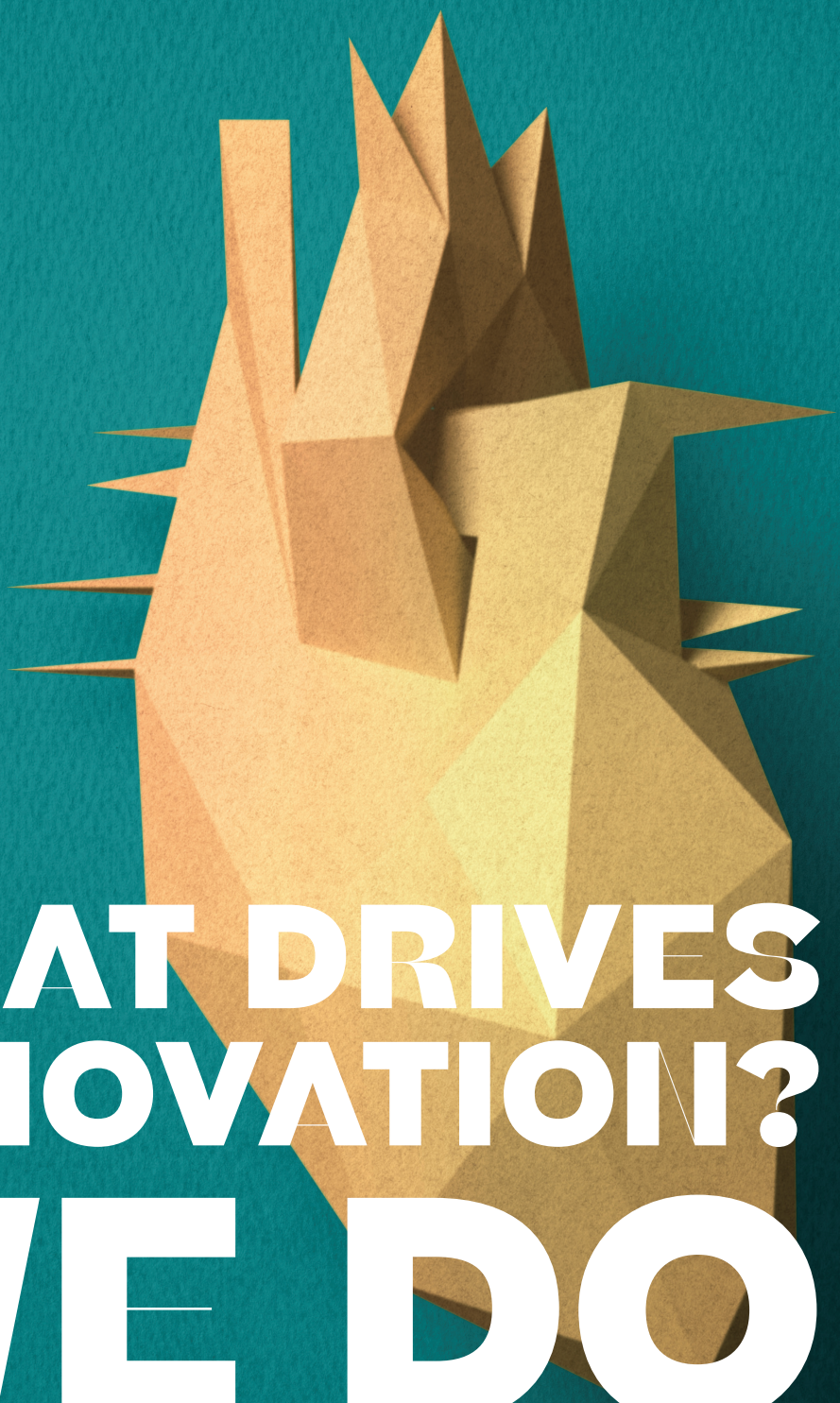
Cedars Sinai
Smidt Heart Institute

ANNUAL REPORT
2020



WHAT DRIVES INNOVATION? WE DO

Cedars Sinai
Smidt Heart Institute

We know from experience: There is no straight, predictable path to a pioneering medical discovery. ***We have created the optimal conditions for investigators at the Smidt Heart Institute to pursue every promising new direction that could lead to a lifesaving innovation in cardiovascular medicine.*** *Our researchers inspire each other to venture into uncharted terrain as they collaborate across disciplines. Laboratories and clinics are conveniently located under one roof, making it easy for clinical scientists to brainstorm and share knowledge across the many areas in which they have deep expertise—including transplantation, cell therapy, congenital heart disease, women's heart health, valve disorders, arrhythmia and hypertension. We also collaborate with investigators throughout the nation and the world who share our commitment to improving patients' lives. The common denominator in all our efforts to conquer the biggest challenges in cardiovascular care is respect for every bold new idea that could spark the next major breakthrough in prevention, diagnosis and treatment. This report highlights the progress we are making—with a mindset always open to new ways of thinking, which could lead to more effective ways of healing.*

dear colleague,

Rapid growth and remarkable innovation over the 12 years since the Smidt Heart Institute was launched at Cedars-Sinai have brought us to a defining moment in our evolution as a leader in cardiovascular research and care.

We have successfully completed a major restructuring process that allows us to better serve our patients, our community, and our colleagues across the nation and the world. In a departure from longstanding tradition, functions that had been under the broader umbrella of Cedars-Sinai's departments of medicine and surgery now reside in the Smidt Heart Institute's new Department of Cardiology and Department of Cardiac Surgery.

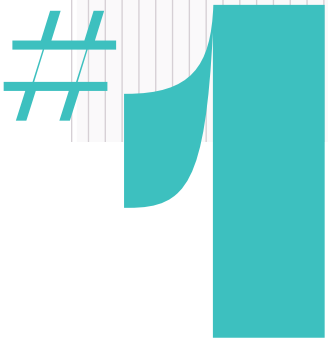
As a result of nationwide searches, we have recruited two stellar clinical scientists, Drs. Christine Albert and Joanna Chikwe, to serve as founding chairs of these departments and lead us into the future (see pages 6 and 10). The new vision and capabilities these leaders bring to the Smidt Heart Institute will position us to play an even larger role in fighting cardiovascular disease. The 2020 Annual Report provides a glimpse of the strides we are making in advancing cardiovascular medicine and surgery. We welcome inquiries related to your most challenging cases, and look forward to partnering with you to offer such patients full access to new technology, surgical techniques and therapeutics.

Sincerely,

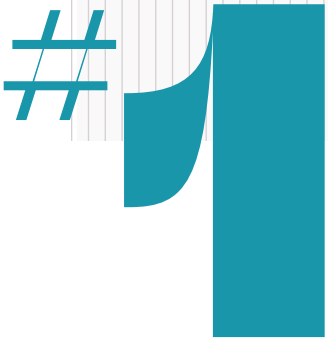
Eduardo Marbán, MD, PhD

Mark S. Siegel Family Foundation Distinguished Chair
Executive Director, Smidt Heart Institute at Cedars-Sinai

THE SMIDT HEART INSTITUTE AT A GLANCE



IN THE WESTERN U.S. FOR CARDIOLOGY AND HEART SURGERY BY *U.S. NEWS & WORLD REPORT*



HEART TRANSPLANT PROGRAM IN THE WORLD

IN EXPERTISE FOR PERCUTANEOUS VALVE PROCEDURES IN THE NATION

2009–2019: A DECADE OF ACHIEVEMENTS

>1,000	HEART TRANSPLANTS
>1,000	ROBOTIC MITRAL REPAIRS
>2,500	AORTIC VALVE PROCEDURES
>3,000	MINIMALLY INVASIVE HEART SURGERIES
>3,500	TRANSCATHETER VALVE PROCEDURES
>3,500	PEER-REVIEWED PAPERS PUBLISHED
20,000	ELECTROPHYSIOLOGY PROCEDURES
>113,000	ADVANCED IMAGING PROCEDURES
>270,000	OUTPATIENT VISITS
>$190m	IN PHILANTHROPIC SUPPORT
>$240m	IN RESEARCH FUNDING

2019 HIGHLIGHTS

- **New Leadership:** Cedars-Sinai announced the appointments of new leaders to head two newly established departments within the Smidt Heart Institute. Heart surgeon Joanna Chikwe, MD, was named founding chair of the Department of Cardiac Surgery, and Christine Albert, MD, MPH, was named founding chair of the Department of Cardiology.

- **Cardiac Surgery Outcomes:** The institute's newly formed Department of Cardiac Surgery earned a distinguished three-star rating from The Society of Thoracic Surgeons in recognition of the outstanding quality of patient care and outcomes in mitral valve replacement and repair (MVRR) surgeries in 2018–2019. The mitral valve program is one of a handful in the United States with a near 100% repair rate for degenerative mitral disease.

- **Vaping Research:** Research presented at the annual American Heart Association Scientific Sessions suggested that electronic nicotine delivery systems, including devices such as e-cigarettes, may be even more harmful to the heart than tobacco cigarettes. The study's senior author, Florian Rader, MD, MSc, says it's the unknown bucket of chemicals that vaping device manufacturers use to form vapors that is likely causing the most harm.

- **Barbershop Study Named Top U.S. Clinical Research Achievement:** The Clinical Research Forum recognized the Smidt Heart Institute with its most prestigious award, The Herbert Pardes Clinical Research Excellence Award, for its study aimed at developing a blood pressure control program for African American men in the comfortable and convenient environments of their barbershops. In just six short months of community intervention, the study—first published in the *New England Journal of Medicine* and led by the late hypertension expert Ronald G. Victor, MD—improved the outcomes and control of high blood pressure in more than 60% of participants. The 12-month data published recently in *Circulation* backed up the results, proving that a pharmacist-led, barbershop-based medical intervention can successfully lower blood pressure in African American men who face a higher risk of disability and premature death due to uncontrolled high blood pressure.

- **More Options for Heart Valve Defects:** Research led by Raj Makkar, MD, and published in *JAMA*, showed for the first time that patients with bicuspid aortic valve defect and aortic valve stenosis who undergo the TAVR catheter-based valve replacement procedure have the same survival and complication rates as patients without the defect who undergo the same procedure. Shortly after Makkar's study was published, the Food and Drug Administration approved the procedure for an expanded group of patients with aortic stenosis.

- **Advances in Women's Heart Disease:** Noel Bairey Merz, MD, teamed up with actress, singer and activist Barbra Streisand to warn women and their physicians about the different heart disease symptoms that are more common to women than men. The duo shared their perspectives on a *Journal of the American Medical Association* podcast, JAMA Author Interviews. The podcast resulted from a review article authored by Bairey Merz and published in the same journal. The article outlined how physicians should evaluate female patients who have chest pain. Bairey Merz is director of the Barbra Streisand Women's Heart Center within the Smidt Heart Institute.

- **Paradigm for Discovery and Translation:** Biomarkers—blood proteins and other quantifiable indicators of disease progression—have already changed the way we practice medicine. High-sensitivity troponin assays, which enable the rapid triage of patients with chest pain, are but one example. New biomarkers promise to improve early disease detection and enable personalized medicine. In the Smidt Heart Institute, Jennifer Van Eyk, PhD, is revolutionizing the process of biomarker development by streamlining the entire pathway—from discovery, through validation and on to clinically available diagnostics. Our new Precision Biomarker Laboratory collocate the specialists and the key technologies required at each step of the process, enabling seamless translation.

cardiac surgery

The extraordinary level of skill and experience of our surgeons in performing the complete range of open and minimally invasive procedures enables us to provide the best possible outcomes for patients with the most challenging acquired and congenital cardiac conditions. Among the many advanced procedures and techniques we routinely perform are robotic-assisted mitral valve repair and replacement, aortic and tricuspid valve reconstruction, heart and lung transplant surgery, implantation of left ventricular assist devices and total artificial hearts, multi-arterial, robotic and hybrid coronary artery bypass surgery, and adult congenital surgery. Remarkable advances in technology, therapeutics and data science have enabled us to evolve from traditional surgery to a new era of individualized, patient-centered cardiovascular care. We focus not only on extending life but also on restoring quality of life for our patients by creating and skillfully performing minimally invasive procedures. As leaders in the rapid evolution of cardiac surgery, our surgeons are constantly working to improve techniques and expand treatment options so patients can lead more active, fulfilling lives.

JOANNA CHIKWE, MD, FRCS, FACC
The Irina and George Schaeffer Distinguished Chair
in Cardiac Surgery in honor of Alfredo Trento MD
Professor of Cardiac Surgery
Founding Chair, Department of Cardiac Surgery

The Best Care for Patients With Valvular Diseases

Our valvular heart disease program has pioneered minimally invasive methods of performing heart valve surgery and expanded treatment options for patients too frail for conventional surgery. With an expert team composed of interventional cardiologists, cardiac surgeons and advanced practice providers, patients have access to a full spectrum of innovative procedures, such as transcatheter aortic valve replacement (TAVR), percutaneous mitral valve repair (MitraClip), minimally invasive surgery, robotic mitral valve repairs and open-heart surgery. We have performed more percutaneous mitral valve repairs and aortic valve replacements than any other U.S. medical center. With unrivaled expertise, we restore patients' own heart valves, whenever possible, instead of using artificial replacements, to reduce the risk of stroke and the need for lifelong medication and future surgery.

The Best Care for Transplant Patients

Every year since 2010, we have performed more adult heart transplants than any other U.S. medical center, giving patients of all ages a new life after facing incurable heart disease. Our team completed 132 heart transplants in 2019, including two heart and kidney transplants. Our outcomes consistently surpass national benchmarks. Data compiled by the United Network for Organ Sharing shows that from 2010 to 2014, our comprehensive approach to care led to 91% of our patients living more than a year after their heart transplant. Our transplant team closely manages each patient's care during the entire treatment process, then follows up with them for the rest of their lives. We also offer the most advanced durable and temporary cardiac support devices as a bridge to transplant or a long-term solution for patients with heart failure. Our research in this field includes leading high-impact trials that range from a study using tocilizumab to target inflammation and alloimmunity in heart transplant recipients to investigation of malignancy after heart transplantation.

The Best Care for Critical Vascular Diseases

Cedars-Sinai was the first to use a newly approved, minimally invasive device to perform a series of surgeries on patients with aneurysms of the aorta. The Valiant Navion thoracic stent graft system is delivered from a groin blood vessel into the aorta and is deployed under X-ray guidance. The stent graft can travel through smaller, curvy vessels to better adjust to the patient's anatomy. The Smidt Heart Institute led the national clinical tests of the device, developed in collaboration with Medtronic.

The rapid pace of change in what we know and in what we can do about advanced heart disease, along with the sheer complexity of modern cardiovascular surgery, offers exciting opportunities to transform how we think about, diagnose and treat patients of all ages.

JOANNA CHIKWE, MD, FRCS, FACC
The Irina and George Schaeffer Distinguished Chair in Cardiac Surgery in honor of Alfredo Trento MD
Professor of Cardiac Surgery
Founding Chair, Department of Cardiac Surgery

636 TAVR PROCEDURES

251 MITRACLIP PROCEDURES

132 HEART TRANSPLANTS

cardiology

Whether we are working in the laboratory, the clinic or the community, everything we do at the Smidt Heart Institute reflects our top priority: Patients come first. Our Department of Cardiology treats patients from intra-uterine life through old age, providing an unprecedented platform for integrated care. Our team is also deeply committed to improving outcomes and quality of life for everyone—including those in our community who are especially vulnerable and underserved. Our researchers are rapidly expanding basic knowledge about heart disease so we can develop new ways to prevent and treat the most complex cardiovascular problems. Recent research has led to new strategies for the prevention of atherosclerosis and novel tools for imaging cardiac plaque. It's also led to a deeper understanding of immune response to myocardial infarction, the prevalence of heart attack in women and the causes of life-threatening heart rhythm disorders. In the future, we will increasingly focus on population health and disease prevention. This isn't just about helping healthy people stay well. Prevention is vital along the entire continuum of cardiovascular care. For example, we help heart failure patients adopt healthier lifestyles because we know they'll do better than if they just take the right medicine. And research is helping us better understand how diet and lifestyle affect heart rhythm disorders so we can help patients avoid major cardiovascular events.

CHRISTINE M. ALBERT, MD, MPH
Lee and Harold Kapelovitz Distinguished Chair in Cardiology
Professor of Cardiology
Founding Chair, Department of Cardiology

With the incredible breadth of expertise at the Smidt Heart Institute, we are not only developing new technologies to treat disease, we are also advancing the science of population health so we can predict who is at risk and do more to prevent disease.

CHRISTINE M. ALBERT, MD, MPH
Lee and Harold Kapelovitz Distinguished Chair in Cardiology
Professor of Cardiology
Founding Chair, Department of Cardiology

1,299

NUMBER OF CUTTING-EDGE PROCEDURES PERFORMED IN 2019

The Best Care for Heart Rhythm Disorders

Through the comprehensive, long-term Oregon Sudden Unexpected Death Study, we are identifying novel ways of predicting, preventing and treating lethal heart rhythm disorders. Our researchers recently discovered that obesity is an independent predictor of sudden cardiac death (SCD). This finding adds to the mounting evidence on the critical role of lifestyle in predicting and preventing heart disease. We have also linked left ventricular hypertrophy and multiple sclerosis to elevated risk of SCD. And we are working to better understand the risks faced by African Americans—who experience sudden cardiac arrest at twice the rate of Caucasians—and to identify ethnicity-specific targets to protect this group and others, including the rapidly growing Latino population. Our future SCD research will dig deeper into the question of who is at highest risk by examining a combination of clinical, lifestyle, biomarker, genetic and imaging data.

The Best Care for the Tiniest Infants

Researchers in our Guerin Family Congenital Heart Program are the first to use lifesaving technology for treating patent ductus arteriosus (PDA) in premature infants with a transcatheter procedure that can be performed in 20 minutes. Our team led a nationwide clinical trial involving 100 severely premature neonatal patients—including babies as tiny as 2 pounds. The trial tested a self-expanding, wire mesh device developed by Abbott. The device, smaller than a pea, is inserted through a small incision in the leg, then guided through vessels to seal the opening in the heart. Early in 2019, the U.S. Food and Drug Administration approved the Amplatzer Piccolo Occluder, making it the first medical device for minimally invasive treatment of PDA in premature infants.

The Best Care for Women

Paradigm-shifting research at the Barbra Streisand Women's Heart Center has brought about a long overdue transformation in the study of cardiovascular disease. The center has drawn global attention to the need for a better understanding of female-pattern heart disease. As a result, more women are participating in clinical trials so treatments can be tailored to their needs. The center is also helping women recognize symptoms and get diagnosed earlier, while advancing methods of testing and treating female-pattern heart disease. Recent milestones in recognizing conditions more prevalent among women than men include a clinical trial evaluating treatment for chest pain in women with open coronary arteries; the discovery of a new biomarker that makes it possible to diagnose heart failure with preserved ejection fraction (HFpEF) earlier through a simple blood test; and testing the effectiveness of a stem cell therapy that could improve outcomes for patients who have ischemia with no obstructive coronary artery disease (INOCA).

METRICS

ALL PROCEDURES 2019

TOTAL	171,728
CARDIAC CATHETERIZATIONS	12,099
EP PROCEDURES	2,137
CARDIAC SURGERIES	1,420
ADVANCED IMAGING	15,472
NONINVASIVE DIAGNOSTICS	140,600

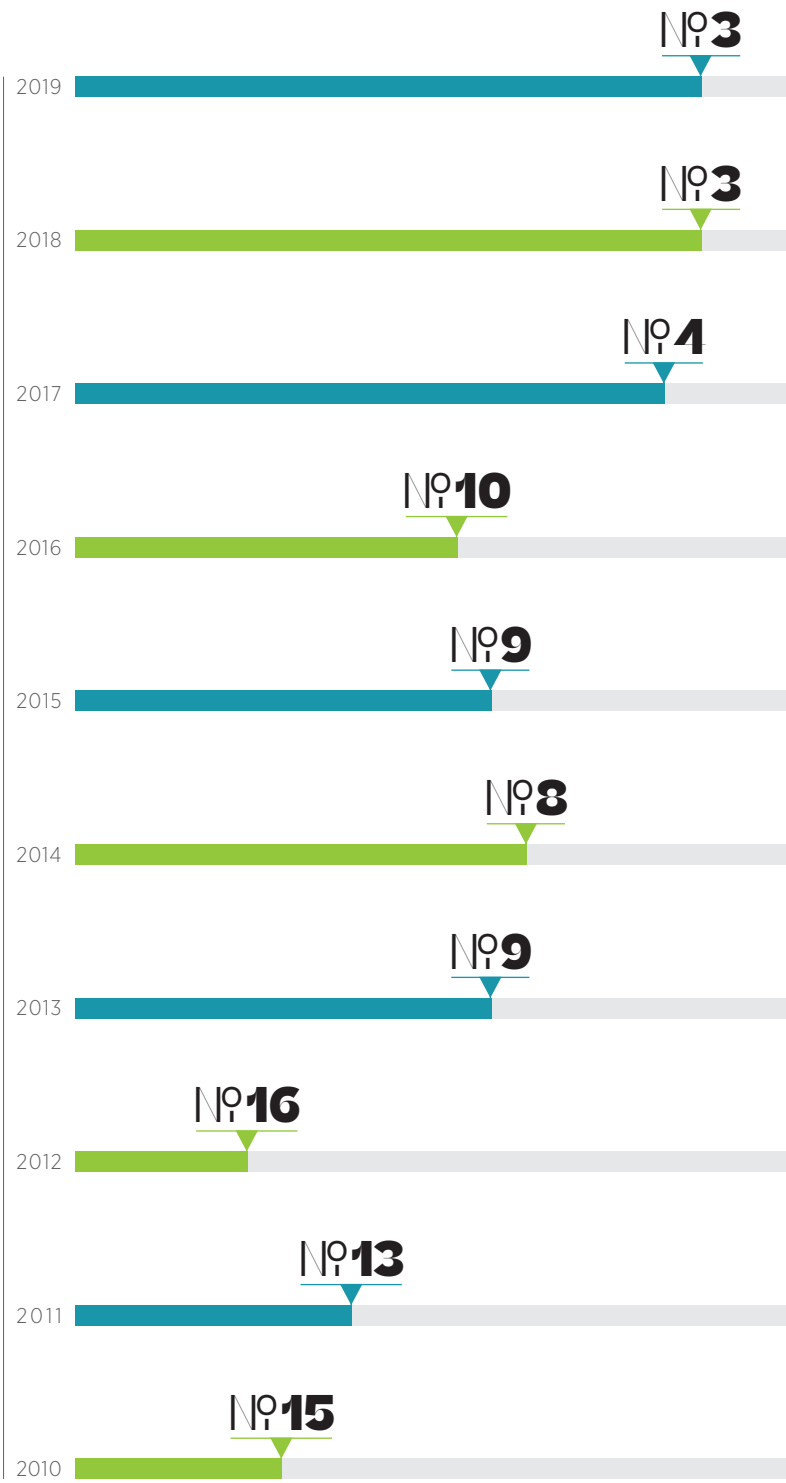
RANKINGS

RANKED AS ONE OF THE TOP

3

IN THE NATION

by *U.S. News & World Report*'s "Best Hospitals 2019–20."



30-DAY MORTALITY RATES

HEART FAILURE

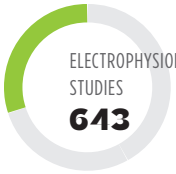
MYOCARDIAL INFARCTION

SOURCE Hospital Compare | All Hospitals | Measure Date Range: July 2015–June 2019

CARDIAC CATHETERIZATIONS

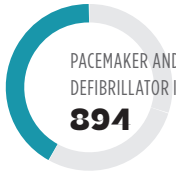
PROCEDURE	FY17	FY18	FY19
Angiography	6,388	6,575	6790
Percutaneous Coronary Intervention	1,844	2,072	2,072
Transcatheter Aortic Valve Replacement (TAVR)	579	597	636
MitraClip	199	221	251
Tricuspid Clip			68
Transcatheter Pulmonary Valve Replacement (TPVR)	9	17	14
Transcatheter Mitral Valve Replacement (TMVR)	26	28	32
Transcatheter Tricuspid Valve Replacement (TTVR)	0	0	2
Valvuloplasty			
Adult Aortic Valvuloplasty (AVP)	5	3	9
Peds AVP	2	0	1
Adult Mitral Valvuloplasty (MVP)	3	5	2
Adult Pulmonary Valvuloplasty (PVP)	2	0	0
Peds PVP	3	4	0
Carotid Angiography/Carotid Stent	16	17	9
Endomyocardial Biopsy	1,136	1,050	1,139
Intracoronary Stem Cell Injection/Therapy	17	14	19
Intravascular Ultrasound	599	631	717
Percutaneous Alcohol Septal Ablation for Hypertrophic Cardiomyopathy	11	19	27
Percutaneous Closure of Paravalvular Leak	13	14	16
Percutaneous Closure of Septal Defects			
Adult Atrial Septal Defect (ASD)	21	27	23
Peds ASD	11	9	3
Adult Patent Foramen Ovale (PFO)	24	44	51
Peds PFO	0	3	0
Adult Ventricular Septal Defect (VSD)	6	1	7
Adult Patent Ductus Arteriosus (PDA)	2	1	1
Peds PDA	7	13	8
Percutaneous Left Ventricular Assist Devices	57	56	90
Percutaneous Closure of Left Atrial Appendage Occlusion	121	116	75
Coronary Reactivity Testing	45	16	37
TOTAL	**11,146**	**11,553**	**12,099**

ELECTROPHYSIOLOGY



ELECTROPHYSIOLOGY STUDIES
643

ABLATION PROCEDURES (SVT/OTHER SVT/A-FIB/A-FLUTTER)
600



PACEMAKER AND CARDIOVERTER DEFIBRILLATOR IMPLANTATION
894

TOTAL
2,137

NONINVASIVE DIAGNOSTICS

ECHO STUDIES

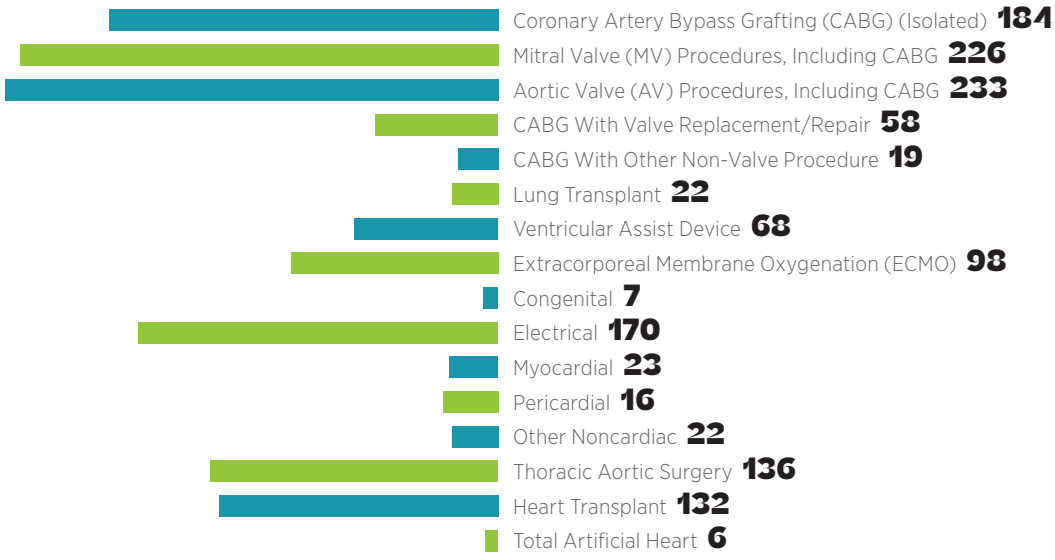
2D Echocardiogram Complete With Doppler With or Without Contrast	**28,650**
Rest and Stress Echocardiogram and CV Stress Test and Dobutamine Echocardiography With or Without Contrast	**1,070**
Transesophageal Echocardiography With or Without Contrast; May Include 3D Imaging	**3,846**
Intima-Media Thickness (IMT) Study	**29**
TOTAL	**33,595**

HEART RHYTHM STUDIES AND PROCEDURES

Electrocardiograms	**100,361**
Cardiovascular Monitoring Services (Holter Monitor, BPM, Mobile Cardiovascular Telemetry	**2,497**
Tilt Table	**58**
Cardioversion	**438**
Pacemaker/Implantable Cardiac Defibrillator (ICD) Device Interrogation and Programming	**3,171**
Enhanced External Counterpulsation (EECP) Therapy	**480**
TOTAL	**107,005**

GRAND TOTAL **140,600**

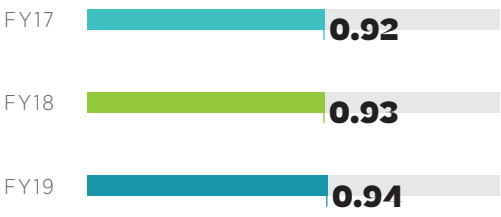
CARDIAC SURGERY



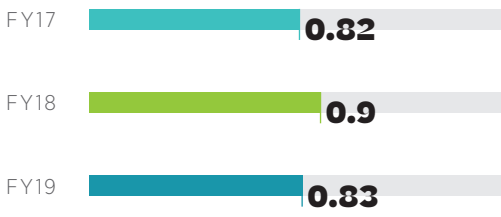
Coronary Artery Bypass Grafting (CABG) (Isolated)	184
Mitral Valve (MV) Procedures, Including CABG	226
Aortic Valve (AV) Procedures, Including CABG	233
CABG With Valve Replacement/Repair	58
CABG With Other Non-Valve Procedure	19
Lung Transplant	22
Ventricular Assist Device	68
Extracorporeal Membrane Oxygenation (ECMO)	98
Congenital	7
Electrical	170
Myocardial	23
Pericardial	16
Other Noncardiac	22
Thoracic Aortic Surgery	136
Heart Transplant	132
Total Artificial Heart	6
TOTAL	**1,420**

LENGTH OF STAY*

CARDIOLOGY

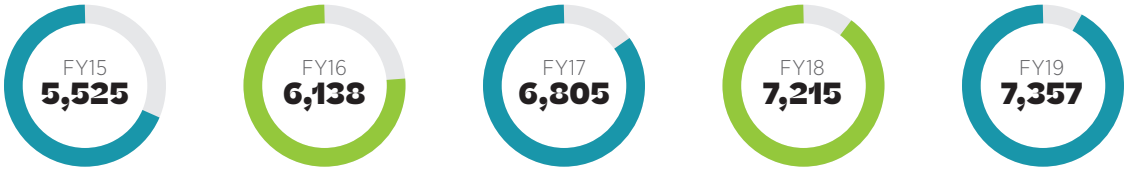


CARDIAC SURGERY

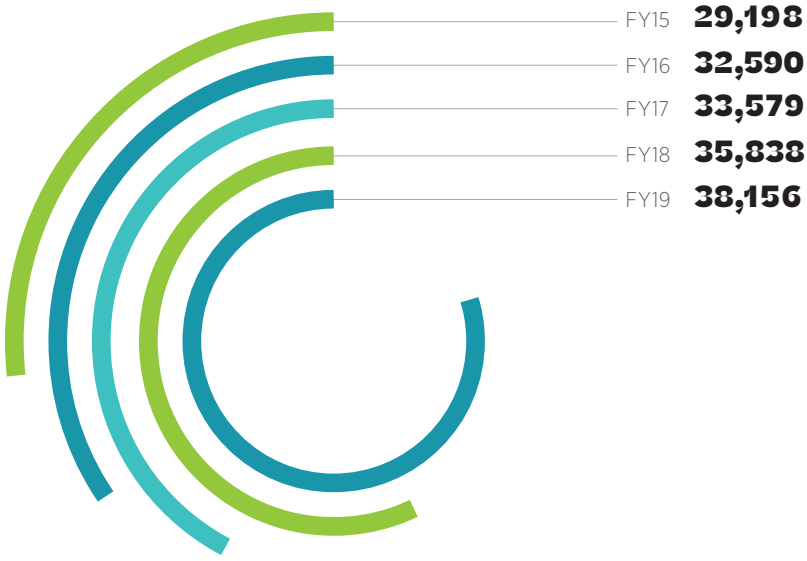


* Observed-to-Expected

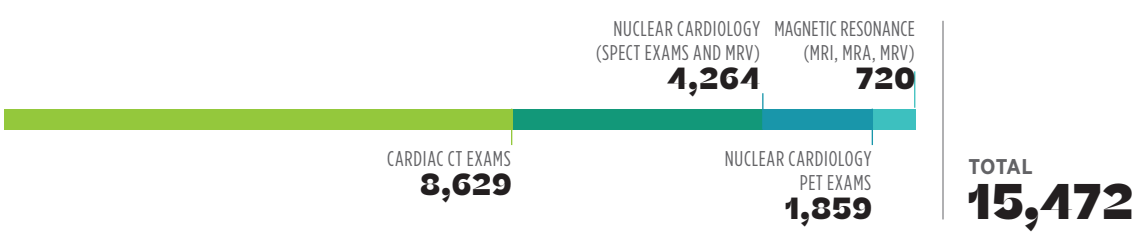
INPATIENT DISCHARGES



OUTPATIENT VISITS



ADVANCED IMAGING

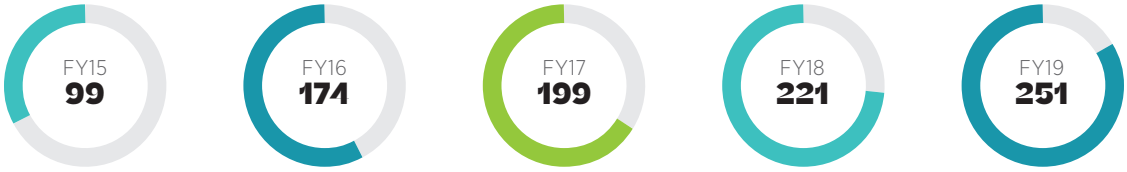


CUTTING-EDGE PROCEDURES

PROCEDURES	FY15	FY16	FY17	FY18	FY19
TAVR	369	483	579	597	636
MitraClip	99	174	199	221	251
TPVR	6	10	9	17	14
TMVR	5	11	26	28	32
Intracoronary Stem Cell Injection/Therapy	25	13	17	14	19
Adult ASD (Atrial Septal Defect)	11	17	21	27	23
Peds ASD	3	10	11	9	3
Adult PFO (Patent Foramen Ovale)	25	17	24	44	51
Peds PFO	0	2	0	3	0
Adult VSD (Ventricular Septal Defect)	10	11	6	1	7
Percutaneous Left Ventricular Assist Devices	33	60	57	56	90
Percutaneous Closure of Left Atrial Appendage Occlusion	38	141	121	116	75
ECMO	77	104	62	60	98
TOTAL	**701**	**1,053**	**1,132**	**1,193**	**1,299**

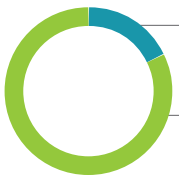
TAVR Procedures

MitraClip Procedures



INTELLECTUAL PROPERTY

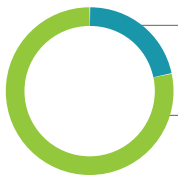
United States Patent Applications



ISSUED **40**

FILED **227**

International Patent Applications



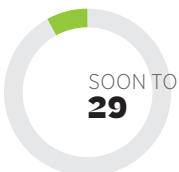
ISSUED **46**

FILED **167**

Copyright Registrations

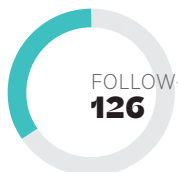
12

CLINICAL TRIALS



SOON TO ENROLL **29**

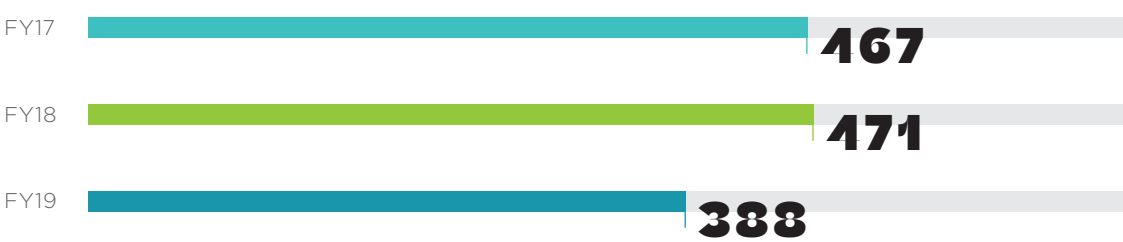
ENROLLING **209**



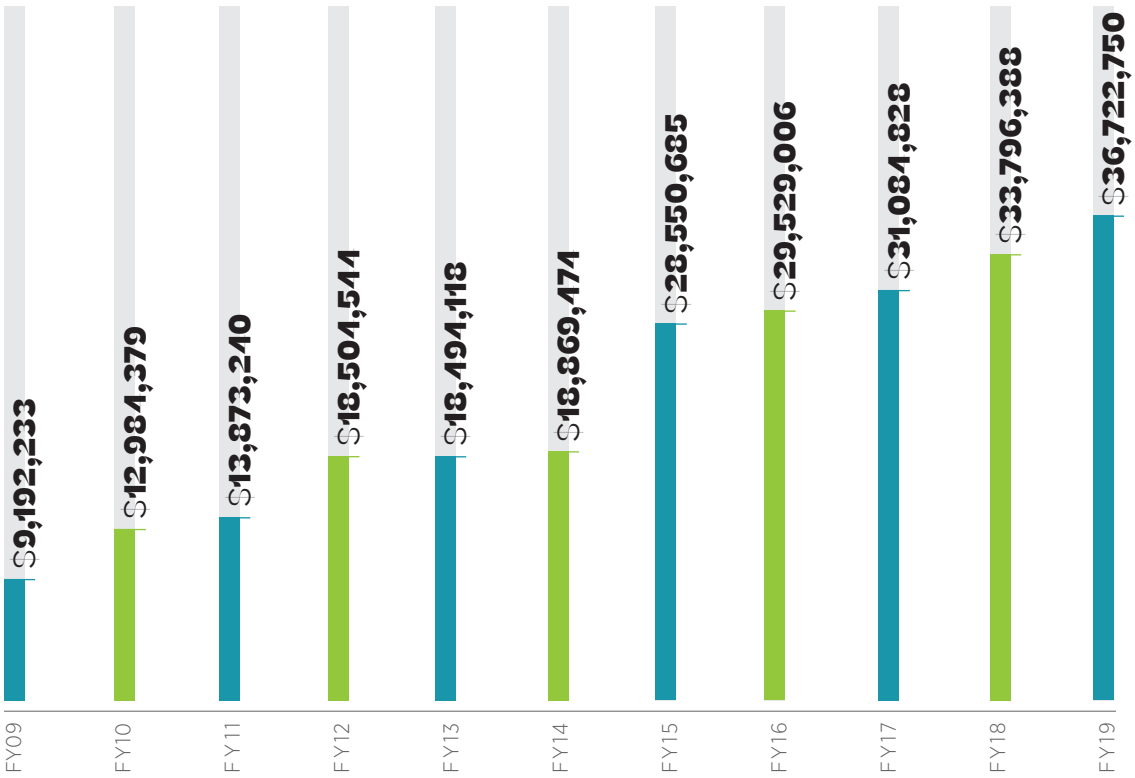
FOLLOW-UP PHASE **126**

TOTAL 364

PEER-REVIEWED ARTICLES



RESEARCH FUNDING

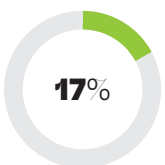


FEDERAL AND STATE
$15,925,647

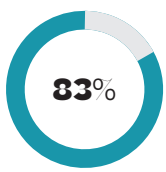
OTHER
PEER-REVIEWED
$14,473,052

INDUSTRY
$6,324,051

TOTAL
$36,722,750



17% INDUSTRY



83% PEER-REVIEWED

CONTACT US

310-423-3300 / CEDARS-SINAI.ORG/HEART

The Smidt Heart Institute includes a broad range of programs with leading expertise in all cardiac subspecialties. Our cardiologists, cardiac surgeons, diagnostic imaging technicians and subspecialty nurses work together to offer the full spectrum of care to make sure our patients achieve the best possible outcomes, relying on minimally invasive techniques whenever possible.

If you have a patient you would like to refer to one of our programs, please contact us at 310-423-3300 or visit cedars-sinai.org/heart. Our physicians will work with you to understand the unique needs of your patient and develop the best treatment plan, and will be available for additional consultations and procedures as needed.

CLINICAL PROGRAMS

Advanced Heart Disease
The Advanced Heart Disease Center encompasses Heart Failure, Heart Transplant and Mechanical Circulatory Support with a patient-focused and integrated team approach.

Heart Failure
The Heart Failure program at the Smidt Heart Institute offers a team approach and holistic treatment for patients coping with advanced heart failure and cardiomyopathy.

Heart Transplant
For each of the past several years, Cedars-Sinai has led the nation in the number of adult heart transplants completed. The program offers advanced options in cardiac support devices, surgical techniques and anti-rejection technologies.

Mechanical Circulatory Support
The Mechanical Circulatory Support Program offers lifesaving cardiac technology, including left and right ventricular assist devices and total artificial heart. These advanced devices can be a bridge to a transplant or a permanent treatment.

Valvular Heart Disease
The interventional cardiologists and surgeons at the Smidt Heart Institute have performed more percutaneous mitral valve repairs and aortic valve replacements than any other U.S. medical center.

Aortic Disease
Our aortic disease specialists have extensive experience in performing the most advanced surgical techniques and procedures. They diagnose and treat the full range of diseases that affect the aorta and branch arteries.

Cardiac Surgery
Smidt Heart Institute cardiac surgeons specialize in minimally invasive and robotic surgery and in treating high-risk patients, including those with low ejection fraction and reoperations.

Cardio-Oncology
The highly specialized cardio-oncology clinic is dedicated to the heart health of cancer survivors and patients undergoing cancer treatment.

Congenital Heart Disease
Patients with congenital heart disease receive the most sophisticated treatment available, including advances in nonsurgical techniques. The program treats patients from birth through adolescence, and for the entire course of their adult lives.

Electrophysiology
Electrophysiologists at Cedars-Sinai combine dedication to research with excellent patient care, working to discover new tools to predict life-threatening arrhythmias and technologic advancements to provide safety to our procedures.

General & Preventive Cardiology
Cardiology patients—fetal, pediatric and adult—receive the care and evaluations they need to stay healthy and prevent, reduce or reverse damage to their hearts.

Genetic Disorders of Cardiovascular System
This multidisciplinary program at the Smidt Heart Institute provides genetic counseling, personalized care and support to patients and families with hereditary heart conditions.

Hypertension
With expertise in treating the most complex cases, hypertension specialists offer testing, consultation, and surgical and nonsurgical treatment options for patients who have severe, uncontrolled or unexplained hypertension.

Interventional Cardiology
Interventional cardiologists perform a wide range of diagnostic and therapeutic procedures for coronary artery disease, arteriosclerosis, heart muscle function and heart valve dysfunction.

Pulmonary Hypertension
Pulmonologists and cardiologists collaborate to accurately diagnose—and successfully treat—common and complex forms of pulmonary hypertension and pulmonary vascular disease, participating in worldwide clinical trials to develop medical breakthroughs and transform treatments

Regenerative Medicine
Regenerative medicine specialists offer consultations for patients with heart and vascular disease who may be eligible to participate in a clinical trial focused on cardiac stem cell therapy.

Women's Heart Disease
The Smidt Heart Institute plays a leading role in identifying female-pattern heart disease, developing new diagnostic tools and advancing specialized care for women.

Vascular Surgery
The Vascular Surgery Program's physicians expertly diagnose and manage all arterial and venous disorders, and are nationally recognized for successfully treating carotid stenoses, aortic aneurysms and lower extremity circulatory problems.

Cedars Sinai
Smidt Heart Institute

ANNUAL REPORT **2020**

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