



MITRAL FOUNDATION



REPORT OF ACTIVITIES



MITRAL FOUNDATION

Advancing the Understanding of Mitral Valve Disease

Cardiovascular disease is the leading cause of death worldwide. In this context, the overall prevalence of at least moderate heart valve disease is estimated to be 2.5% before the age of 65 years and up to 13% after 75 years. Among these patients, mitral valve disease accounts for almost half of the cases, being the most common in younger adults.

Today's gold standard treatment for mitral valve regurgitation is mitral valve repair, particularly in young patients with mitral valve prolapse. Mitral valve repair, as opposed to mitral valve replacement, offers better outcomes with significantly decreased perioperative complications. However, although its technical feasibility in all prolapsing valves has been fully characterized, mitral valve replacement still remains common. The average repair rate in patients with degenerative mitral valve disease is around 60% worldwide, way below the at least 90% threshold recommended by the American College of Cardiology or the European Society of Cardiology.

Since its creation in 2009, the Mitral Foundation has been a solid driving force in advancing the understanding of mitral valve disease and promoting mitral valve repair techniques. Our commitment to patient care, education, research, and academic excellence has contributed to accelerate momentum in the field in many invigorating ways. This year saw a significant expansion of our team which led to the effective implementation of programs to deliver our

message to the community, thus engaging volunteers and caregivers. Our work has also reached across continents and we have organized surgical missions to Asia and South America. Furthermore, we have directed our resources to lead mitral valve repair workshops around the globe to educate surgeons from over 50 countries. This was also an enriching year for our portfolio of collaborations with world renowned international organizations.

Achieving a transformational change also mandates tireless effort and tenacity, and our educational commitment to advocate for and endorse mitral valve repair among surgeons worldwide has never been stronger. Our partnership with patients, families, researchers, clinicians and philanthropists throughout the surgical community will continue to provide support and information about mitral valve disease and mitral valve repair. Because of your generosity, the Mitral Foundation will relentlessly persist on expanding and leading new programs and initiatives to maximize the impact of every gift. Thank you for being a part of our enduring mission.

David H. Adams, MD
President, Mitral Foundation





MITRAL FOUNDATION

Advancing the Understanding of Mitral Valve Disease

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This booklet offers a detailed overview of the Mitral Foundation portfolio of educational activities. All the medical content does not provide a complete analysis of the topics covered and should not replace any independent judgement of a physician.

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On behalf of the Mitral Foundation, I am pleased to share with you our detailed report of activities, which showcases our incessant commitment to advancing the understanding of mitral valve disease through unique innovation, focused research, and visionary educational techniques. This is the year we release our first publication with our work as a foundation. We are deeply proud of all that we have achieved so far, and conscious of the challenges ahead. In order to face these challenges, we will be extremely responsible with the financial resources we have been entrusted with to ensure a superlative productivity of every single donation.

The Mitral Foundation is linked to the Department of Cardiovascular Surgery at The Mount Sinai Hospital, one of the leading and most prestigious programs in the nation. Our specialists and healthcare team continue to be recognized for their excellence in cardiac care and their ability to blend research into clinical practice. Our outstanding outcomes and our pledge to quality, safety and patient satisfaction greatly benefit a significant volume of national and international patients. In addition, our cardiologists and cardiovascular surgeons provide superb training to the upcoming generation of professionals, thus safeguarding the continuity of excellence. Without doubt, all the aforementioned principles and values are extrapolated to the Mitral Foundation leadership.

Over the years, the Mitral Foundation has become an international hub of excellence in mitral valve disease, offering unrivaled teaching resources. Next year, we will team up with recognized partners worldwide to continue our educational mission, to establish new centers of expertise in developing countries, and to promote innovative valve screening programs.

It is my privilege to take this responsibility, and to join forces in shaping the future of medicine with outstanding benefactors. To all of you, my deepest appreciation.

Javier Castillo, MD
Executive Director, Mitral Foundation



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Leading Education on Mitral Valve Disease



MITRAL VALVE DISEASE AND MITRAL VALVE REPAIR
DAVID H. ADAMS, MD: DEVOTED TO MITRAL VALVE DISEASE

MITRAL FOUNDATION

THE MOUNT SINAI HOSPITAL

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SCHOLARSHIP FUND

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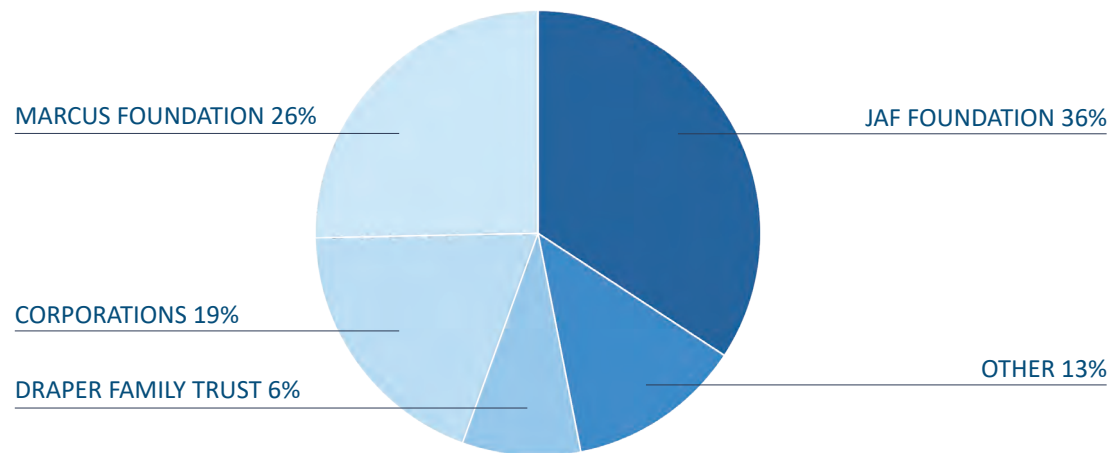


MITRAL FOUNDATION

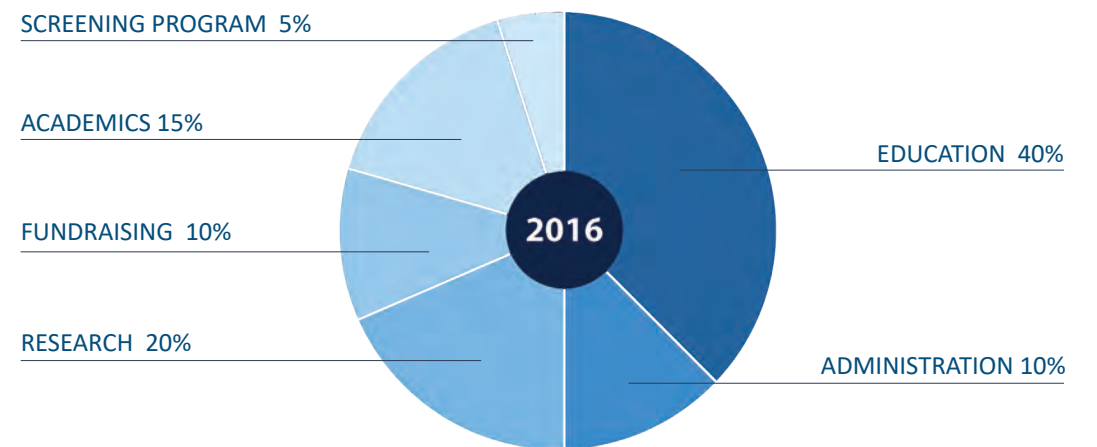
Advancing the Understanding of Mitral Valve Disease

The Mitral Foundation is dedicated to advancing the understanding and treatment of mitral valve disease in the United States and around the world. Education of patients and physicians about mitral valve treatment options, and training a new generation of surgeons on mitral valve repair strategies are the core of the mission. The Mitral Foundation also supports basic and clinical research, promising new treatment modalities, and opportunities to improve the quality of patient care.

KEY MITRAL FOUNDATION BENEFACTORS



MAJOR FUNDING AREAS



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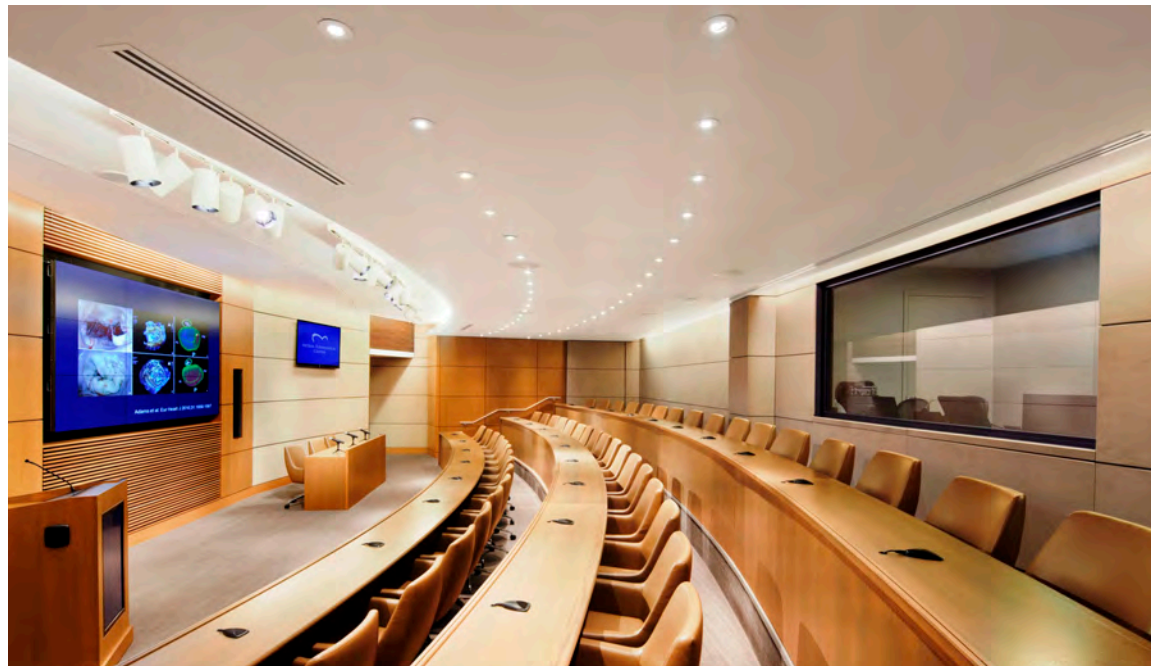
THE MITRAL FOUNDATION CENTER: FOLLOWING A LEGACY

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The new Mitral Foundation Center enables Dr. Adams and his mitral team to gather national and international surgeons and cardiovascular specialists willing to learn the latest in mitral valve disease.

“Even the world’s great golf professionals retain coaches throughout their pro careers. From junior surgeons just out of training, to those who want to become super-specialists in mitral valve repair, every surgeon or physician needs opportunities to continue learning and improving”



The Mitral Foundation Center is a 21st century educational platform with state-of-the-art technology to produce educational workshops which include live surgery video streaming and media sharing.

A few decades ago, every heart surgeon who wanted to learn how to perform mitral valve reconstruction traveled to a small amphitheater at Broussais Hospital in Paris (below) to witness live surgery by the father of the field, Dr. Alain Carpentier. Good notes and sharp memory were essential to take home all the details of every surgical technique and procedure. For many years, these surgeons subsequently attended Dr. Carpentier’s meeting, “Le Club Mitrale” also in Paris. Now, the Mitral Foundation is taking the lead and assuming responsibility to continue Dr. Carpentier’s legacy and educate the next generation of mitral valve surgeons.



FOLLOWING A LEGACY



Cardiac surgeons from around the world attended Dr. Carpentier's workshops in Paris to learn mitral valve reconstruction (left). Among these, renowned leaders such as Delos Cosgrove, Randolph Chitwood or Patrick Perrier. Dr. Carpentier's retirement ceremony gathered the most prestigious cardiac surgeons in Paris (right).



Opening reception of the Mitral Foundation Center. From left to right - Dr. Dennis Charney (Dean of the Icahn School of Medicine at Mount Sinai), Dr. David H. Adams, Jürgen R.A. Friedrich, Anke Friedrich, Dr. Hermann F. Sailer and Max Friedrich. This year, an additional \$500K have been invested in technological upgrades (below).

The Mitral Foundation Center is the educational cornerstone of the Mitral Foundation. Made possible by a generous \$2M inaugural gift from Anke and Jürgen R.A. Friedrich through the JAF Foundation, the Mitral Foundation Center has already welcomed over 400 surgeons from 40 states and over 50 countries. The Center consists of a state-of-the-art auditorium with seating for 60 people, advanced technologies for information sharing, and a translation room for international participants. It has become an international hub for training surgeons and industry professionals due to our ability to digitally record live surgery and presentations which provides a unique opportunity to teach the technical nuances of mitral valve surgery thus impacting the field. The Mitral Foundation Center enables innovative learning and training opportunities through our video library (accessible from anywhere in the world), facilitates opportunities to experience Mount Sinai's team approach to patient care and delivers the finest education in mitral valve reconstruction today.



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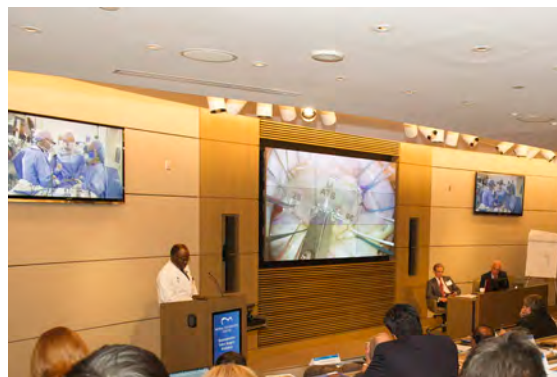
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The Mitral Foundation has partnered with leading corporations such as Medtronic and Edwards Lifesciences to host mitral valve repair workshops. Clinical sessions moderated by Drs. Anyanwu (surgeon) and Martin (cardiologist) provide a professional learning platform for attendees. International visiting surgeons include Marc Gillinov (Cleveland Clinic), Hugo Vanermen (Hirslanden Hospital) and Tirone David (Toronto General Hospital).

Physicians from over 50 countries has visited the Mitral Foundation Center. During the mitral workshops, Dr. Adams has performed over 25 live surgeries (video streamed to the Mitral Center). The live analysis of very complex cases offers a unique opportunity for physicians to witness advanced repair techniques. In the figure, experienced visiting surgeons such as Gilles Dreyfus (Monaco) and Gebrine El-Khoury (Brussels, Belgium).





QUORUM IBEROAMERICANO DE PATOLOGIA MITRAL

The workshop takes place in Madrid biannually and its official language is Spanish. Every two years we bring the world's leading figures in mitral valve disease together for two days to discuss the latest information regarding guidelines, imaging, pathology, current minimally invasive procedures, percutaneous approaches, state-of-the-art surgical techniques, devices, and long-term results. The first edition of the meeting in June 2016 was extremely well received and had over 300 attendees from Spain and Latin America. The workshop is directed by David H. Adams and Angel Gonzalez Pinto.

INTERNATIONAL MITRAL WORKSHOPS

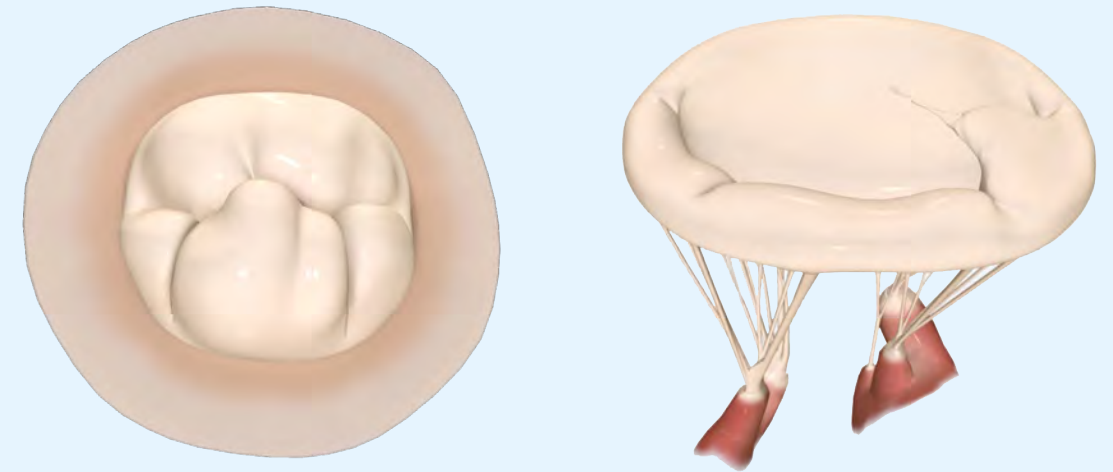
The Mitral Foundation and major professional organizations devoted to cardiac care such as the American Association for Thoracic Surgery or the American College of Cardiology have partnered in multiple occasions to organize international mitral workshops in several countries including Argentina, Brazil, Indonesia and Japan.



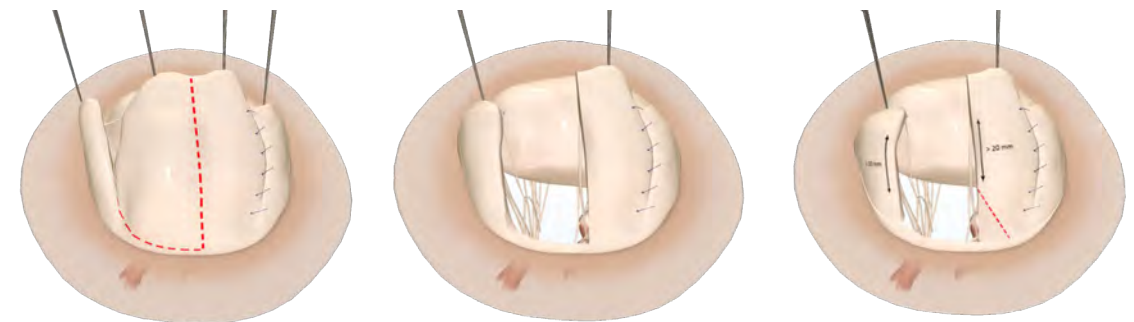
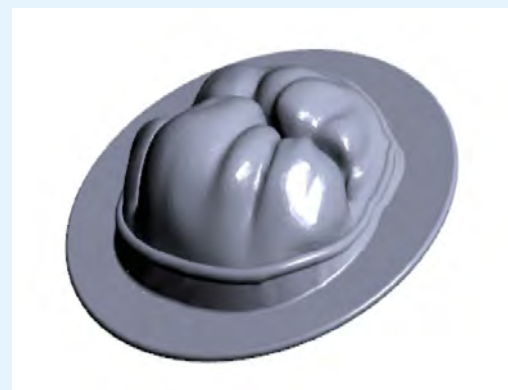
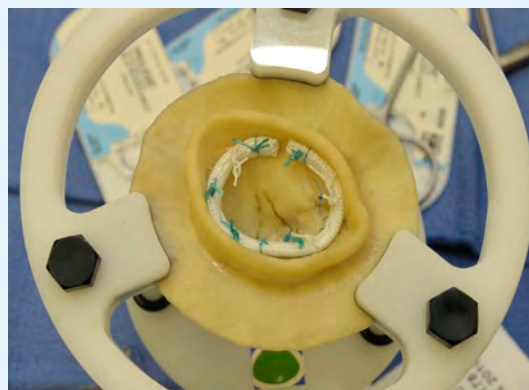
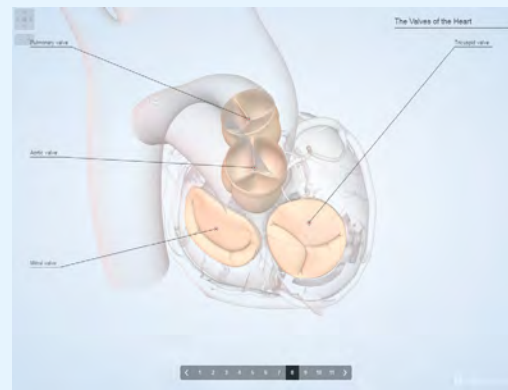
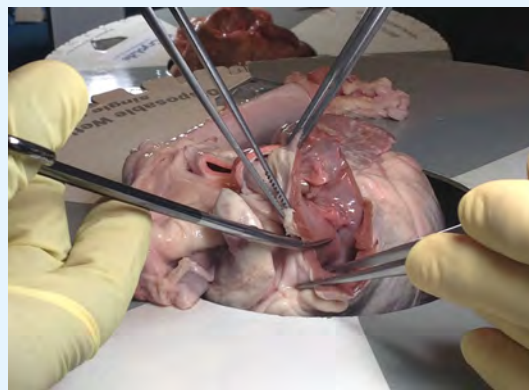
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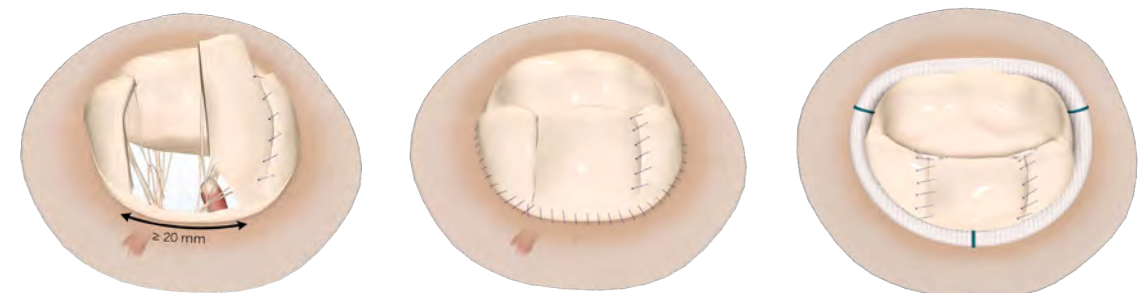
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The Mitral Foundation has partnered with BioDigital, Inc. to develop realistic, interactive 3D computer generated models that will serve as simulators of multiple mitral valve lesions and disease etiologies.



In addition to computerized mitral valve models, the Mitral Foundation keeps organizing wet labs and working with LifeLike BioTissue, Inc. to create realistic synthetic valves for training. These models will match the etiologies generated for the BioDigital, Inc. project (previous page).



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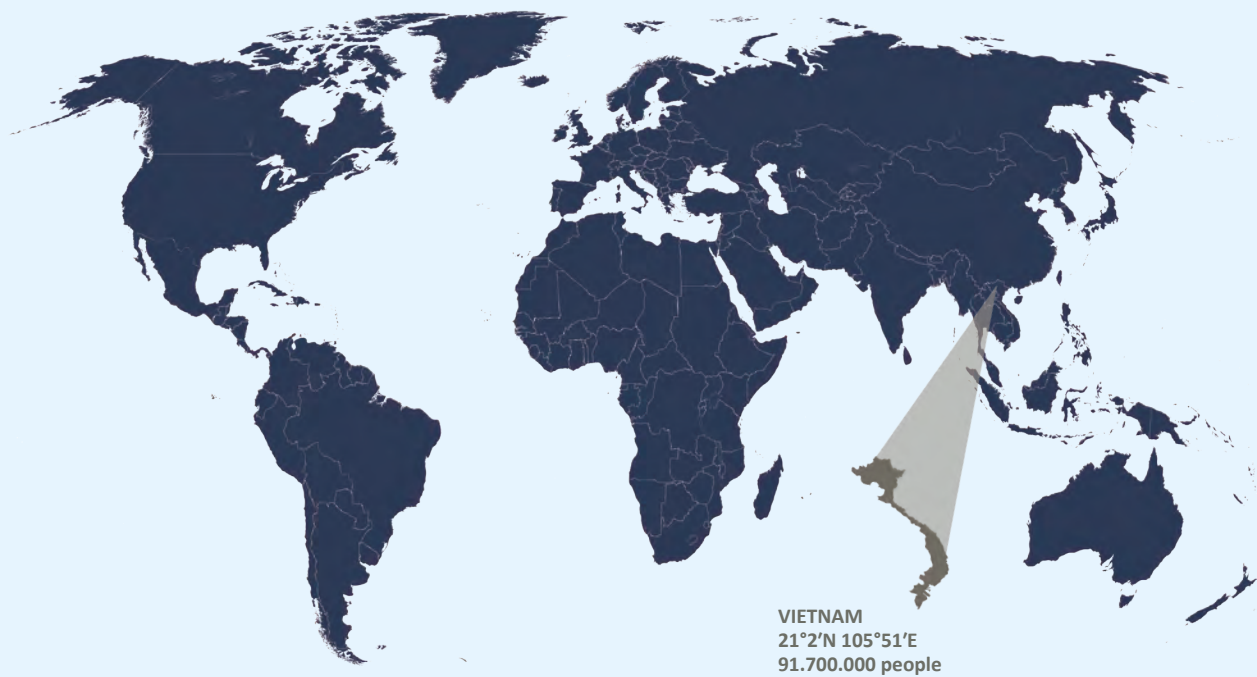
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One of the essential objectives of the Mitral Foundation is to develop regional reference centers. Organizing a cardiac surgical mission is demanding and requires the recruitment of experienced personnel (physicians and clinical support), and arranging for supplies and equipment (identify, collect, pack, and transport). This is beyond critical to successful surgery. All the equipment available in foreign operating rooms is usually unfamiliar to the staff.





VIETNAM
21°2'N 105°51'E
91.700.000 people



Benh Vien Trung Uong Hue National Central Hospital

2.078 beds
2.016 employees
431 doctors
70.000 admissions per year
20.000 surgeries per year

Congenital mitral valve disease



April 2009
Hue, Vietnam



Hue City was for years the capital of Vietnam and the home of the emperors. Along the river lie the emperors of the Nguyen dynasty temple and tombs.



A 14-year-old patient from Kim Long (one of the 27 administrative districts in Hue City) recovers after successful surgery in the intensive care unit.



Our medical staff analyzes all the preoperative workup and screens every single patient a month before the trip. The day before surgery, Dr. Adams and his team meet patients and relatives personally.



Preoperative sessions with all the surgical staff are organized to establish a perioperative strategy for every surgical candidate. These sessions enhance awareness of surgical risks through a thorough patient assessment.

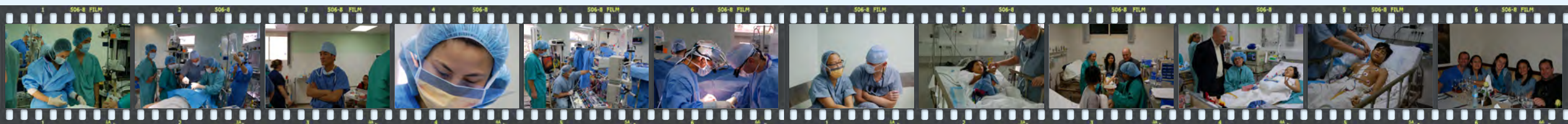


Dr. Adams and Dr. Nguyen with nurse practitioner Mary Joy Santillan (scrub nurse in OR22 at The Mount Sinai Hospital for 10 years). On the right, Dr. Adams and Chief anesthesiologist at National Central Hospital.



Mission to Vietnam: Congenital Mitral Valve Disease

For ten years, Dr. Khanh H. Nguyen (Chief of Pediatric Cardiovascular Surgery- above) has taken time away from his busy schedule to volunteer in underserved countries. In 2009, Dr. Nguyen returned to his birthplace accompanied by Dr. Adams and a Mount Sinai team that included anesthesiologists, echocardiographers, intensivists, perfusionists, and nurses. During the mission, they treated Tetralogy of Fallot, a congenital disease in which there is a hole between the pumping chambers of the heart, and congenital mitral valve disease. “There is a shortage of specialized cardiac surgeons in Vietnam and medical missions like these can have a dramatic impact on the lives of children in underserved countries where treatment of congenital or rheumatic heart disease is not available” said Dr. Nguyen.





HONDURAS
14°6'N 87°13'W
8.249.574 people



Hospital Escuela Universitario Universidad Nacional Autónoma

1.306 beds
554 employees
200 clinicians
200 surgeons
46.000 patients per year

Rheumatic mitral valve disease



March 2010
Tegucigalpa, Honduras

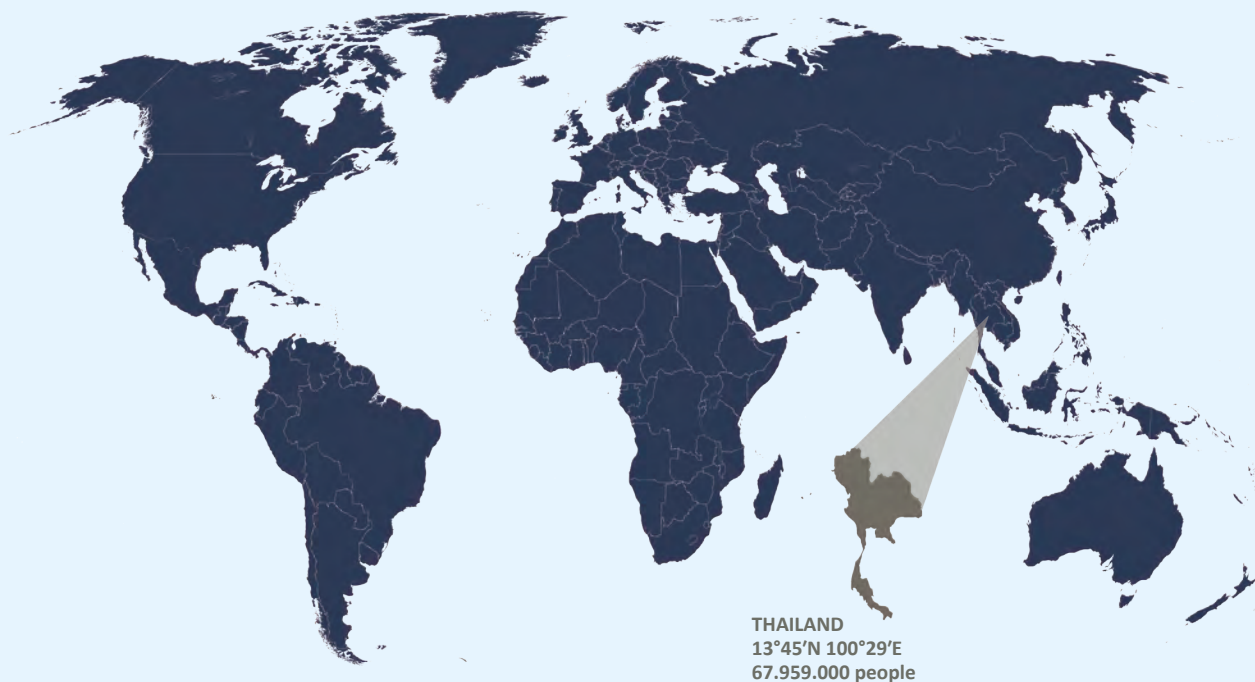


The St. Michael the Archangel Cathedral is a Catholic religious building in Tegucigalpa, Honduras. In 1746, a fire consumed the temple, which was rebuilt in 1756 on the same site.



With the support of the Mitral Foundation, Dr. Federico Milla traveled to Tegucigalpa to bring supplies and assist Dr. Hugo Orellana with the surgical repair of Paola's (12-year-old) complex congenital heart defect.





THAILAND
13°45'N 100°29'E
67.959.000 people



May 2011
Chiang Mai, Thailand

Maharaj Nakorn Chiang Mai Hospital Chiang Mai Hospital

1.400 beds
69 ICU beds
28 operating rooms
48.000 admissions per year
1.000 open heart surgeries per year

Rheumatic mitral valve disease



The Wat Phra That Doi Suthep temple is in Chiang Mai, Thailand. The original copper plated Chedi is the most holy area of the temple grounds. Within the site are pagodas, statues, a museum, and shrines.



Dr. Adams and Dr. Tepsuwan evaluating the final mitral valve repair with a high definition video camera. In Thailand, every surgery is recorded to go over details with junior surgical staff at a later session.



Dr. Adams and Dr. Weerachai (Chief of Cardiovascular Surgery at Chiang Mai Hospital) meet patients and relatives. Below, preoperative sessions with junior faculty and assessment of echocardiographic images.

Evening rounds to evaluate the postoperative progress of patients in the intensive care unit. The involvement of experienced intensive care nurses is crucial for patients undergoing heart surgery.



Mission to Chiang Mai: Rheumatic Mitral Valve Disease

In May 2011, the Mitral Foundation completed its first sponsored mission to Chiang Mai, Thailand. Assisted by Chiang Mai University Hospital surgeon Dr. Thitipong Tepsuwan (central image), Dr. David H. Adams operated on six patients with mitral valve disease.

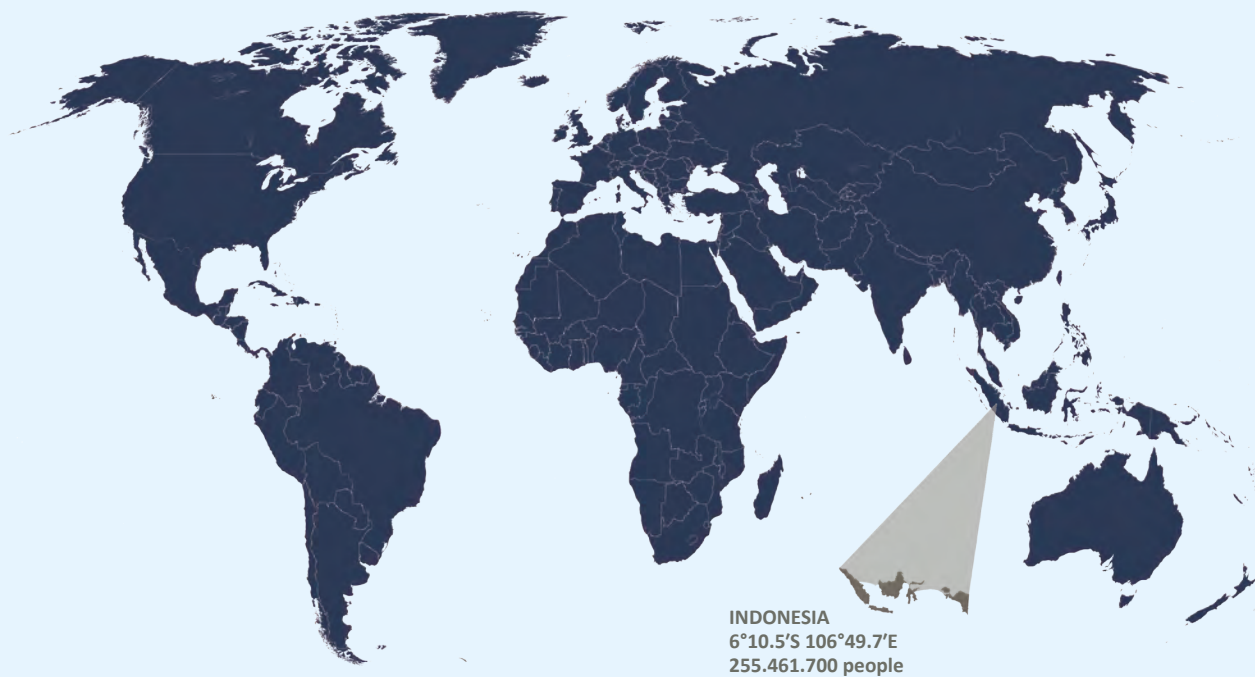
Chiang Mai is located in northern Thailand and is one of its largest provinces. Although not as touristy as other regions, it is a hub of transportation and the economic and educational center of the region.

“This is one of the best hospitals in Asia. The junior faculty showed great talent, this is the kind of partner we need...a few years of working together will allow them to become a regional reference center” said Dr. Adams.



Preparation and anticipation are probably the two key aspects of any surgical mission. The lack of a full preoperative workup or a strict surgical protocol may be a setup for failure. Once we determine the mission service to be performed, a prospective team can be recruited and logistic support with potential donations is organized. After landing, we visit the hospital and meet patients and relatives. Preoperative results are discussed with local faculty and we do not hesitate to withhold any surgery if there are problems that could cause a negative outcome for the patient or the procedure.

By committing to regular trips to some specific institutions, we greatly promote regional expertise. In addition, we have a very detailed understanding with the local authorities about the type of work that needs to be conducted.



INDONESIA
6°10.5'S 106°49.7'E
255.461.700 people



March 2012
Jakarta, Indonesia

Pusat Jantung Nasional National Cardiovascular Center

900 beds
20 cardiac ICU beds
18 operating rooms
32.000 admissions per year
700 open heart surgeries per year

Adult congenital mitral valve disease



Borobudur is a 9th century Mahayana Buddhist temple in Magelang, Central Java, Indonesia. The temple is decorated with 2,672 relief panels and 504 Buddha statues.



Drs. David H. Adams and Javier Castillo perform a complex mitral valve repair on a 24-year-old-patient from an underserved area in Jakarta, Indonesia.



Drs. Adams and Castillo joined Drs. Tarmizi (Chief of Cardiovascular Surgery) and Bono (Chief of Structural Heart Valve Disease) to operate on patients with complex congenital mitral valve disease.



Mission to Indonesia: Adult Congenital Mitral Valve Disease

In 2012, Dr. Adams was invited as a keynote speaker to the Annual Meeting of the Asian Society for Cardiovascular and Thoracic Surgery to be held in Bali, Indonesia. The Mitral Foundation organized then a surgical mission to Pusat Jantung Nasional, Indonesia's largest cardiovascular center located in Jakarta.





DOMINICAN REPUBLIC
19°00'N 70°40'W
10.075.045 people



Hospital General Universitario de la Plaza de la Salud

276 beds
32 ER beds
22 ICU beds
70 residents and fellows
155.081 visits per year

Rheumatic mitral valve disease



March 2013
Santo Domingo, Dominican Republic



The Cathedral of Santa Maria la Menor in the Colonial Zone of Santo Domingo is dedicated to St. Mary of the Incarnation. It is the oldest cathedral in the Americas, begun in 1512 and completed in 1540.



A 23-year-old patient from Bella Vista (Santo Domingo) recovers in the intensive care unit after her second open heart surgery (mitral valve re-repair).



Preoperative patient assessment with Drs. Adams, Fischer, Guerrero, Milla, Cedano (Cardiovascular Surgery), Montero (Anesthesia) and Mejía (Medical Director).



Dr. Lazala visits every single patient minutes before heading to the airport as a mission routine. In the picture with the Chief Intensivist at HGU de la Plaza de la Salud.

Mission to Dominican Republic: Rheumatic Mitral Valve Disease

In March 2013, the Mitral Foundation continued its work with Hospital General de la Plaza de la Salud in Santo Domingo, Dominican Republic. The team helped to establish two operating room suites - creating a space that will continue to serve the Dominican Republic patient community for years to come. Dr. Ricardo Lazala (above), the Mission Director and Senior Director of Clinical Services at the Mount Sinai Hospital, organized a team of nine participants including Dr. David H. Adams (cardiac surgeon), Dr. Federico Milla (cardiac surgeon), Dr. Gregory Fischer (anesthesiologist), Dr. Fouad Lajam (thoracic surgeon), Gideon Sims (Administrative Director of the Mitral Foundation), Mary Joy Santillan, RN (scrub nurse), and Juan Obando, CCP (perfusionist).




Complex mitral valve repair on a patient with long-standing rheumatic mitral valve disease. In the picture, Mary Joy Santillan (scrub nurse) and Drs. Adams, Milla and Lajam.





Logistic Support


In March 2014, the Mitral Foundation continued its strong partnership with Hospital General de la Plaza de la Salud. Two heart-lung machines, an intra-aortic balloon pump console, a heater-cooler, two cell saver machines and a 3D echocardiographic machine were donated.

 March 2014
Santo Domingo, Dominican Republic



Logistic Support

In May 2015, the Mitral Foundation continued its support to the Maharaj Nakorn Chiang Mai Hospital and its new Director of Valve Surgery and former Mount Sinai fellow Dr. Thitipong Tepsuwan. The trip included a short visit to the Central Chest Institute of Thailand, in Bangkok.

 May 2015
Bangkok and Chiang Mai, Thailand



Sorin (Mr. Brian Scanlon - above), Edwards Lifesciences and Phillips are some of the corporations that collaborated with the Mitral Foundation in order to donate state-of-the-art technology for cardiac care.

Dr. Adams joined two other world renowned mitral surgeons such as Dr. Tirone David (Toronto General Hospital) and Dr. Taweesak Chotivatanapong (Central Chest Institute of Thailand) in Bangkok.