



Heart to Heart Global Cardiac Care

Measurably Expanding Access Since 1989

SITE: SAN JUAN DE DIOS HOSPITAL
LOCATION: SAN JOSE, COSTA RICA
COLLABORATION LAUNCHED: 2023

SEPTEMBER 16–24, 2023
ADULT CARDIAC TRAINING MISSION 1
MINIMALLY INVASIVE VALVE SURGERY



San Juan de Dios Hospital, September 20, 2023 Danny Ramzy, MD (left) and Klaus Kuhn, MD (right) perform an aortic valve replacement via a right anterior minithoracotomy—the first ever in Costa Rica. Asdrubal Alfaro, MD (center left), chief of heart surgery at Calderon Guardia Hospital, observes the procedure.

OUR FIRST ADULT CARDIAC TRAINING MISSION IN COSTA RICA

In September 2023, Heart to Heart launched a collaboration with the cardiac team of San Juan de Dios Hospital (HSJD). Heart to Heart Founder & Medical Director Nilas Young, MD and Senior Advisor for Strategic Initiatives Josie Everett had made two pre-launch trips to Costa Rica to discuss the scope of the potential collaboration with the local team. Our first training mission was preceded by long-distance planning, to set and support our surgical focus. At the request of our Costa Rican colleagues, Heart to Heart assembled a team of medical volunteers who are experts in minimally invasive valve repairs and replacements. Our team was perfectly suited to teach and train the local team of cardiac specialists.

The entrance to the grounds of HSJD is adjacent to the National Children's Hospital (HNN), Heart to Heart's pediatric partner site. The HSJD compound consists of several two- to five-story historic buildings and many annexes surrounding a small

courtyard. The open air hallways are crowded with patients being wheeled on gurneys, families waiting for their loved ones, medical personnel, and other staff. In September, when Costa Ricans celebrate their nation's independence, we saw flags adorning walls, windows, and desks throughout the hospital.

Cardiovascular disease is the leading cause of death worldwide. In Costa Rica, many adults have heart disease that is not diagnosed until they are experiencing symptoms and in need of medical intervention. A small Central American country, Costa Rica has three public adult cardiac centers—HSJD, Calderon Guardia Hospital, and Mexico Hospital—all located in the capital city of San Jose. Together, they perform approximately 500 open heart surgeries annually. In order to serve all adult heart patients, the cardiac community in Costa Rica would need to perform nearly four times as many operations per year.



Confluence of clinical skills and technology Dr. Ramzy observes Dr. Kuhn's surgical technique in real time via monitor. This enables Dr. Ramzy to provide continuous expert guidance to Dr. Kuhn, who is leading the operation to repair the patient's mitral valve.

Teaching Minimally Invasive Valve Surgery

Over the course of our operating week, cardiac surgeons Danny Ramzy (Heart to Heart) and Klaus Kuhn (HSJD) led the joint team in operating on four adult patients pre-selected for their suitability for a minimally invasive approach. They ranged from 37 to 75 years of age. The team began the week with a comprehensive review of the surgical cases, discussing in detail the anatomy of each heart—in particular, the position and angle of the aortic or mitral valve vis-à-vis an incision for a right minithoracotomy. When evaluating patients for minimally invasive surgery, valve position and angle dictate whether such an approach is a safe and technically feasible option: in some cases, there is no viable surgical path and therefore the best course of treatment is a full sternotomy open heart surgery.

The minimally invasive approach is a relatively recent innovation, and it continues to be refined. Although more technically demanding for surgeons than a full sternotomy, this approach offers the patient the likelihood of less trauma to the chest; reduced risk of postoperative infection; and an easier recovery in the ICU and thereafter.

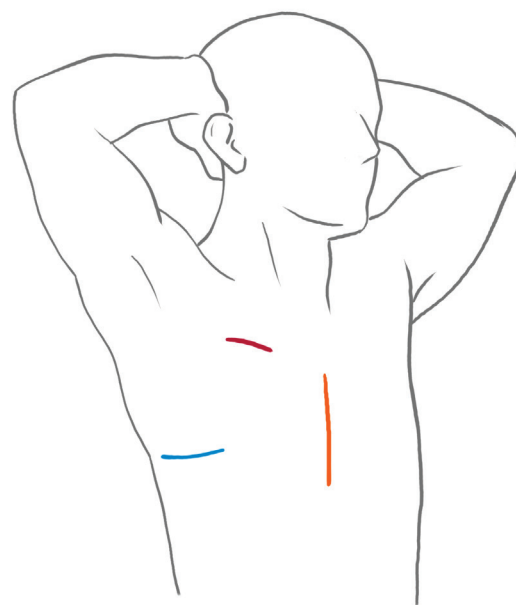
Dr. Nilas Young led our team of IO, which included a cardiac surgeon, cardiac anesthesiologist, cardiologist, surgical technician, circulating nurse, chief medical interpreter, and two administrative staff. We focused our advanced surgical training on mitral valve repair and aortic valve replacement. We are thrilled to report that all four surgeries were successful and that all four patients were discharged from the ICU within two to four days after their operations.

“When I applied to medical school, this is what I wanted to do—take care of patients and teach. This is the purest form of medicine. Being on this mission felt great, all of us working together focused totally on helping people. Our work can benefit both a lot of patients and our Costa Rican colleagues, who will in turn train more people.”

— DANNY RAMZY, MD, CARDIAC SURGEON
UTHEALTH HOUSTON, MCGOVERN SCHOOL OF MEDICINE

Thoracotomy vs. Sternotomy

Minimally invasive approaches provide access to the heart through a small incision on the patient's side, between the ribs, instead of through a traditional larger chest incision, which requires cutting through the breastbone (or sternum). Less invasive surgical techniques require very high levels of skill and precision and are suitable to treat certain patients. During Heart to Heart's mission, three patients—Ilse, Alana, and Mercedes—underwent mitral valve repair via right minithoracotomy, indicated in blue in the diagram. Carlos, another Heart to Heart patient, underwent aortic valve replacement via a right anterior minithoracotomy, shown in red. (None of our patients underwent a full sternotomy.)



- sternotomy
- right minithoracotomy
- right anterior minithoracotomy



Treating Adults with Heart Disease Left photo: Heart to Heart patient Alana G. (37 years old) with her husband Michael. Right photo: Sophia Gamez; Cecilia Carrillo-Humerez, RN; Danny Ramzy, MD; Juan Pablo Ruiz, MD; Reggie Fan; Hernan Carcamo, MD; and Dali Fan, MD. Behind the team, in the HSJD courtyard, a statue of St. John, patron saint of the ill, for whom the hospital is named, benevolently gazes at passersby.

Alana's Story: Adult Congenital Heart Disease

Patients in need of surgical valve repair are typically older, as the heart's valves wear out with age. However, heart valve disease can strike at any age—and can even be present at birth (known as congenital heart disease, or CHD). Such was the case for our youngest surgical patient—a 37-year-old mother-of-three named Alana (pictured above).

Alana was born with heart valve disease: an ostium primum atrial septal defect (ASD) with a mitral valve cleft. In the U.S. she would likely have had surgery in her late teens or early twenties, once her heart had reached full size. When we met Alana, she had not undergone any kind of surgical intervention. Fortunately, our team confirmed that she was a good candidate for a minimally invasive surgical repair, despite her condition having been exacerbated with each of her pregnancies. On September 21, our joint team repaired Alana's mitral valve and closed her ASD via a right minithoracotomy. Two of Heart to Heart's colleagues from HNN, pediatric cardiac surgeons Margarita Camacho and Karla Castro, observed the repair of Alana's congenital defects in the operating room.

Alana's surgery was a success. After recovering in the ICU for two days, Alana was stable enough to be transferred to the ward, and one day later, she was back home with her family. Her symptoms will continue to improve over several months, and Alana will be seen by her cardiologist periodically to ensure that her heart continues to function well. Thanks to this procedure, Alana can now enjoy a near-normal life expectancy—a 20-year increase from her prior prognosis. Access to the heart care she needed not only saved her life, it gives Alana a future and the gift of getting to raise her three young children.

Effective communication facilitates building close collegial

A Foursome of Firsts

- 1 Heart to Heart's training mission to HSJD was our first time collaborating with Costa Rica's adult cardiac specialists.
- 2 Our first training mission to HSJD was the first time that the nearly 200-year-old hospital hosted a humanitarian cardiac mission.
- 3 Our joint team performed the first aortic valve replacement operation via right anterior minithoracotomy in Costa Rica.
- 4 Specialists from three of the country's four public heart centers came together to observe in the operating room—a Costa Rican cardiac community milestone!

relationships and the transfer of advanced cardiac knowledge—both key to implementing our program model. We were delighted to have four heritage speakers of Spanish on Heart to Heart's team. Their linguistic and cultural fluency made an invaluable contribution to the success of this mission. The knowledge transferred to our new colleagues will be of benefit to the entire cardiac community of Costa Rica, laying the foundation for ongoing clinical skills training and didactic education. This, in turn, translates to greater access to life-saving treatment for heart patients in Costa Rica now, and for generations to come.

We are honored to play a part in expanding comprehensive cardiac care, to serve—and save—Costa Rican people of all ages. Passion for teamwork and mentoring is a hallmark of Heart to Heart volunteerism. By teaching and training local cardiac specialists new ways to care for patients across the country, we will improve the entire continuum of cardiac care for the youngest, tiniest babies, their parents, and their grandmothers and grandfathers as well.

PROCEDURES PERFORMED

September 2023

Patient exams, echo studies, and consultations (15)	3,394
Minimally invasive heart surgeries (4)	64,763
Intraoperative TEE studies and readings (4)	3,200
Anesthesia (4)	30,015
Post-op exams and readings (4)	1,024
RN/tech support (ICU + OR)	4,650
Professional consulting + lectures	2,250
Total In-Kind Medical Services	\$109,296

Data compilation as of November 20, 2023.



LASTING LEGACY: Would you like to ensure that life-saving heart care is available to children around the world? Join the Heart to Heart Legacy Society by making a legacy gift, such as by naming Heart to Heart as a beneficiary or by making a bequest in your will or trust. Your generosity will expand access to cardiac care, saving lives for generations to come. We welcome gifts in any amount. For more information, contact josie@heart-2-heart.org

FINANCIAL OVERVIEW

October 2022–September 2023

In-kind support

In-kind medical services	109,296
Non-medical in-kind (see Expenses below)	2,540
Total In-kind Support	\$111,836

Total program value

Donated medical services	109,296
Expenses (excl. non-medical in-kind)	63,280
Non-medical in-kind donations	2,540
Total Program Value	\$175,116

Expenses

Interpreters, in-kind	400
Meals, in-kind	940
Program supplies	1,631
Pre- and post-trip coordination and logistics	16,560
Travel	27,841
Travel insurance, in-kind	1,200
Year-round program development	17,248
Total Expenses	\$65,820

64% of total program value consisted of goods and services donated in-kind to Heart to Heart and utilized at HSJD, Costa Rica.

Heart to Heart leveraged each dollar spent **2** times in donated in-kind goods and services.

Thank you to our partners, whose continued support fuels our progress!

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Heart to Heart
**INDIVIDUAL
DONORS**



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Heart to Heart is deeply grateful to our medical volunteers for their extraordinary altruism: their time and expertise are invaluable as we work to advance cardiac care to serve all heart patients in Costa Rica.

HEART TO HEART–SAN JUAN DE DIOS TEAM

UC Davis Medical Center: Dr. Dali Fan, cardiologist; Memorial Hermann-Texas Medical Center: Cecilia Carrillo-Humerez,* circulating nurse; Sophia Gamez, surgical technician; Dr. Danny Ramzy, cardiac surgeon; Dr. Juan Pablo Ruiz,* cardiac anesthesiologist; Heart to Heart: Dr. Hernan Carcamo,* lead medical interpreter; Lucie Everett,* interviewer and interpreter; Albina Popova, executive director; Dr. Nilas Young, founder & medical director; Boston Scientific, U.S.: Reggie Fan, videography assistant and guest.

**Spanish-English bilingual*