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Cardiac Care in Belize: Building a Local, Sustainable Program from “Square One”

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Acknowledgement

Since the writing of this paper, sadly Dr. Francis Robicsek passed away on April 3rd, 2020. A world renowned cardiothoracic and vascular surgeon, as well as a devoted humanitarian, his foresight and wisdom made these and many other clinical and benevolent programs possible and successful.

Conflict of Interest: none declared.

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“Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime.”¹

Cardiology and cardiac surgery care and facilities are often limited, or non-existent in many regions worldwide. Prior to 2012, this was the case in Belize, formerly British Honduras.

Belize, the only English-speaking country in Central America, has a population of approximately 430,000. The gross per capita income is the equivalent of \$11,900 or less with one-third of the population living below the poverty level and many living in poor or indigent conditions. The prevalence of cardiovascular disease is high, second only to malnutrition and metabolic diseases. In 2020, cardiovascular disease and COVID 19 tied for leading causes of death. The country is extremely poor and unable to upgrade its health facilities with operating funds focused to combat conditions such as malaria, dengue, malnutrition, parasite, and HIV.^{2,3}

There are 4 health regions, but Karl Heusner Memorial Hospital Authority (KHMHA), situated

in Belize City, Belize, is the only tertiary care hospital in the country. While attempting to provide care to the citizens of Belize, there was a significant shortcoming; the lack of a program for treating cardiovascular diseases. Before 2012, cardiac care for the general population was limited to an electrocardiograph.

Francis Robicsek, MD PhD and Heineman Medical Outreach, Inc. (now Heineman-Robicsek Foundation, Inc. (HRF)) historically had pursued a variety of local and international humanitarian projects, including international medical outreach centered in Central America in the 1970s. Such philanthropy and international outreach led to co-founding the subcontinent's first and only dedicated heart institute, Unidad de Cirugía Cardiovascular de Guatemala (UNICAR), in Guatemala City, Guatemala, which thrived under the leadership of Dr. Raúl Cruz Molina.⁴

Dr. Robicsek had a similar vision for Belize. Working with local leaders including Sir Barry Bowen and the Ministry of Health, our team set out on another journey to develop a sustainable cardiovascular medicine and surgery program in Belize.

Understanding that the creation of sustainable healthcare in medically underserved countries is a multifaceted process, HRF was committed to partnering with local leaders, a local surgeon, Dr. Adrian Coye, who had recently completed his cardiac surgery fellowship in the United Kingdom, and KHMHA to create such a model. HRF operates under the belief that the success of such ventures, rests upon strong and reliable partnerships through which fully functional units are created, setting local teams up for success from the beginning. Through HRF's collaborations with Atrium Health, a healthcare system of 40 hospitals and more than 1,400 care locations, as well as Atrium's Sanger Heart & Vascular Institute (SHVI), in Charlotte, North Carolina, we were able to donate new and refurbished medical equipment, as well as supplies. Local institutions and governmental agencies are expected to provide the facility space and desire to move forward in a sustainable manner.

After ensuring appropriate facility space and commitment, the journey began in 2011 through the donation of a cardiac catheterization laboratory, ECHO sonography equipment (ECHO), and operating room equipment for cardiac surgery, to KHMHA. Simultaneous efforts were ongoing to establish an ECHO network in Central America with access to reading oversight at SHVI.

Through the financial support of Heinen-Robicsek Foundation, Inc., Edwards Lifesciences Foundation, and Heineman Foundation of New York, teams coordinated by HRF were sent to Belize to oversee and/or perform cardiac ECHO's, cardiac catheterizations (cardiac cath), and ultimately cardiac surgical procedures. The concept was to enlist, educate, and facilitate progressive development of local medical expertise, rather than to go and perform the procedures without the involvement of the local medical personnel.

The first cardiac cath were performed in 2011. After performing a number of procedures, efforts began toward establishing a cardiac surgery program with the first open heart surgeries following in July 2012. Teams from SHVI worked along-side Dr. Coye and local healthcare personnel. Such teams included a supporting cardiac

surgeon, perfusionist, OR nursing, and anesthesia/critical care specialists.

With incremental growth, HRF has donated more echocardiographic stations, operating rooms, and intensive care unit equipment, fully outfitting an ICU and cardiac OR. Education and training have been provided by HRF for ECHO and interventional cardiology, cardiac catheterization technology, nursing - both scrub and critical care. Local cardiologist, hospitalists and critical care specialists have chosen to go for advanced training.⁵

Free public screening events began in 2015 and continue annually in rural underserved areas of the country.

The journey has not been without hurdles; however, despite natural disasters wreaking havoc on the hospital structure, and a subsequent global pandemic, the journey continues to gain momentum. Currently, there is a robust 5-year commitment timeline with KHMHA to achieve an independent, sustainable program. Two key components of the commitment timeline are the training of a KHMHA provider under an accredited extracorporeal program and hiring a specialized cardiologist in echocardiography, both of which have been fulfilled. This type of collaborative commitment is the first step in achieving sustainability. Success will be reliant upon multiple factors including the continued dedication and hard work of our Belizean colleagues, KHMHA, and governmental commitment despite the country's ongoing financial difficulties. A longstanding belief of Dr. Robicsek is that it is most important to be present in a supporting role, allowing local colleagues to develop the necessary skill sets and to do the procedures. Our role is to provide assistance and support, as well as to ensure that the results are excellent thus building local confidence and infrastructure. This is significantly different from visiting brigades where the work is done entirely by the visitors who after a limited number of visits, leave very little behind except for ongoing need.

HRF, through Dr. Robicsek's vision, has shown success with a similar program at UNICAR in Guatemala City, Guatemala 45 years ago, which today is the only facility in Central America dedicated to adult and pediatric cardiac

care. Based on that experience, we are confident of future success in Belize. ^{Figure 1}

Figure (and Video) legends

1. Heineman-Robicsek Foundation video: <https://youtu.be/gVW-CkXiSQ-g>

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