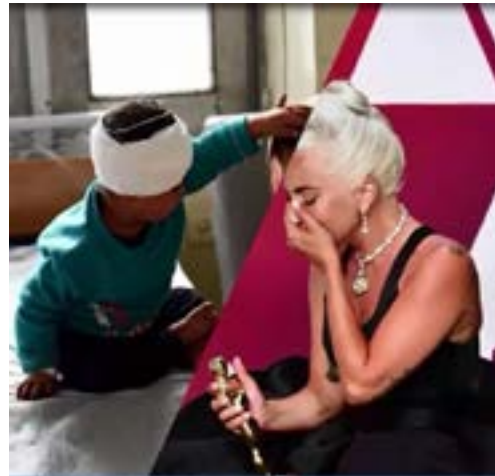



DEVELOPED AND DEVELOPING – THE POOR AND THE RICH THE DISCREPANCY



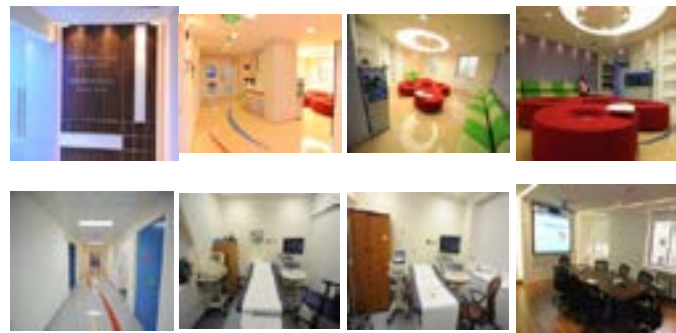


**BUILDING A DEVELOPED CHILDREN'S HEART CENTER- IN A DEVELOPING
COUNTRY-
THE AUBMC EXPERIENCE-LEBANON**

The Journey

- 
- Congenital Heart Disease (CHD), the most common congenital anomaly, is the leading cause of death in the first year of life.
 - Only 7% of children born with CHD in developing countries have access to care.
 - 90% of all global births occur in the poorest parts of the world because of high fertility rates.

THE CHILDREN'S HEART CENTER AT AUBMC

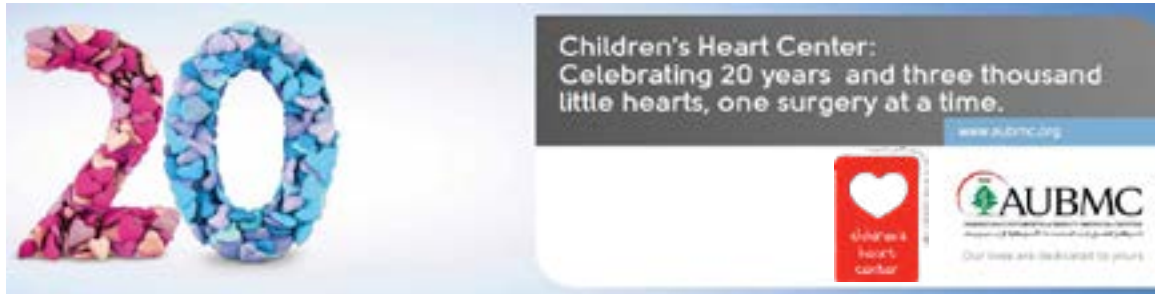


- The Children's Heart Center (CHC) at the American University of Beirut Medical Center (AUBMC) was established in 1995.
- Accommodating thousands of patients and performing hundreds of surgeries annually, a multidisciplinary team of experts at the CHC provides state-of-the-art-care for children with CHD in a compassionate, family-friendly, and supportive environment.

CHILDREN'S HEART CENTER VISION

- **To be the leading regional center that provides comprehensive state-of-art clinical services, research and education in the field of pediatric and congenital heart disease in children.**
- **To promote the establishment of a perpetual philanthropic system that provides financial support to the underprivileged families From Lebanon, the region, and beyond.**





WE ESTABLISHED THE CHILDREN'S HEART CENTER (CHC) AT AUBMC, A "BEACON OF HOPE", FOR CHILDREN WITH CONGENITAL HEART DISEASE.

THE CHC IS A WORLD CLASS CENTER OF EXCELLENCE WITH OUTCOME MEASURES COMPARABLE TO THE BENCHMARKS OF THE BEST CENTERS IN THE WORLD



THE CHILDREN'S HEART CENTER HAS A **MULTI-DISCIPLINARY TEAM OF MORE THAN **50 PHYSICIANS**, NURSES AND ALLIED HEALTH CARE PROVIDERS.**

BUILDING A DEVELOPED PROGRAM IN A DEVELOPING COUNTRY



Clinical Services



Research

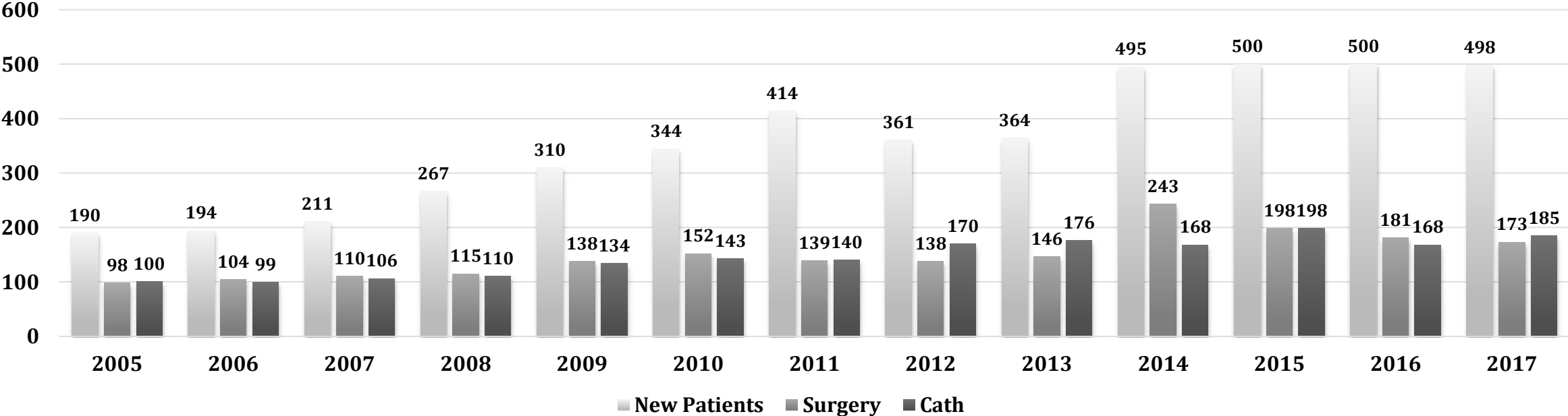


Education and Training



Charitable Organizations

CHC Load 2005 - 2017

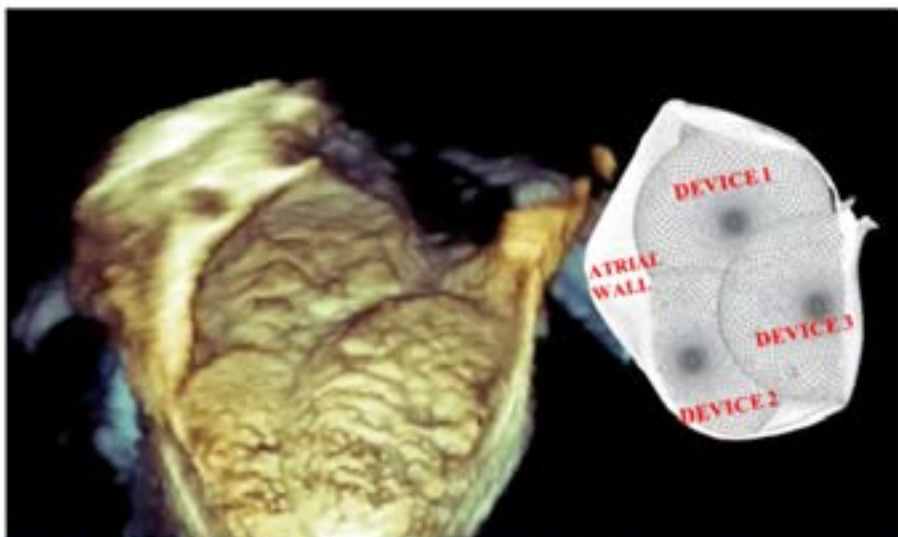


FIRST OF ITS KIND PROCEDURE IN THE WORLD

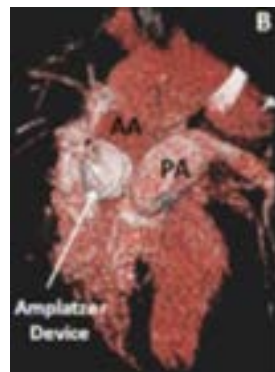
AUBMC

For the First Time in the World, the Children's Heart Center Team at the American University of Beirut Medical Center Implants Three Umbrella-like "Occlutech" Devices to Close Holes in a Child's Heart

Posted on 3/15/2018



3D Echo showing three ASD devices implanted in the Child's Heart



AUBMC

Physicians at the Children's Heart Center at AUBMC perform a first of its kind operation worldwide

Physicians at the Children's Heart Center at The American University of Beirut Medical Center (AUBMC) performed a ground-breaking procedure, a first of its kind in the world, when they closed a rupture in a child's aorta without resorting to surgery, using an umbrella-like Amplatzer device delivered through catheterization.

The procedure was performed by a team led by Professor and Director of the Children's Heart Center, Dr. Fadi Bifar, in



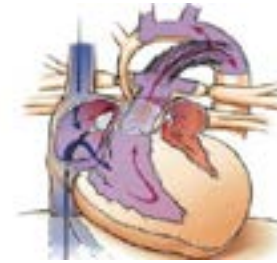
CHILDREN'S HEART CENTER ACHIEVEMENTS - CLINICAL



A novel treatment for rheumatic fever utilizing IVQQ, the first report of its kind worldwide.



A first of its kind in the world, the closure of a rupture in a child's aorta without resorting to surgery, using umbrella-like device.



The First Lebanese percutaneous implantation of a pulmonary valve "Melody".



For the First Time in the World, the Children's Heart Center Team Implants Three Umbrella-like "Occlutech" Devices to Close Holes in a Child's Heart.

1995

2001

2004

2012

2013

2015

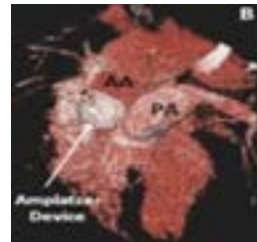
2017

2018

Coil embolization of a patent ductus arteriosus for the first time in the Eastern Mediterranean Region.



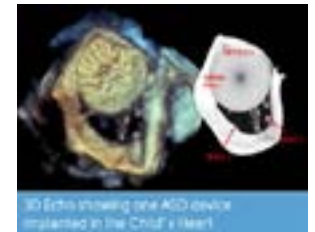
Performing the first Lebanese closure of a VSD utilizing Amplatzer device. Only few centers in the world were eligible to perform this procedure.



The Implementation of the Hybrid Norwood's Heart Surgery for the first time in Lebanon and the region.



Performed the First Successful Heart Transplant in Lebanon in the Pediatric Age Group.



First Pediatric Heart Transplant in Lebanon and the Levant area

AUBMC

The Children's Heart Center at AUBMC Makes History by Performing The First Successful Heart Transplant in Lebanon in the Pediatric Age Group.

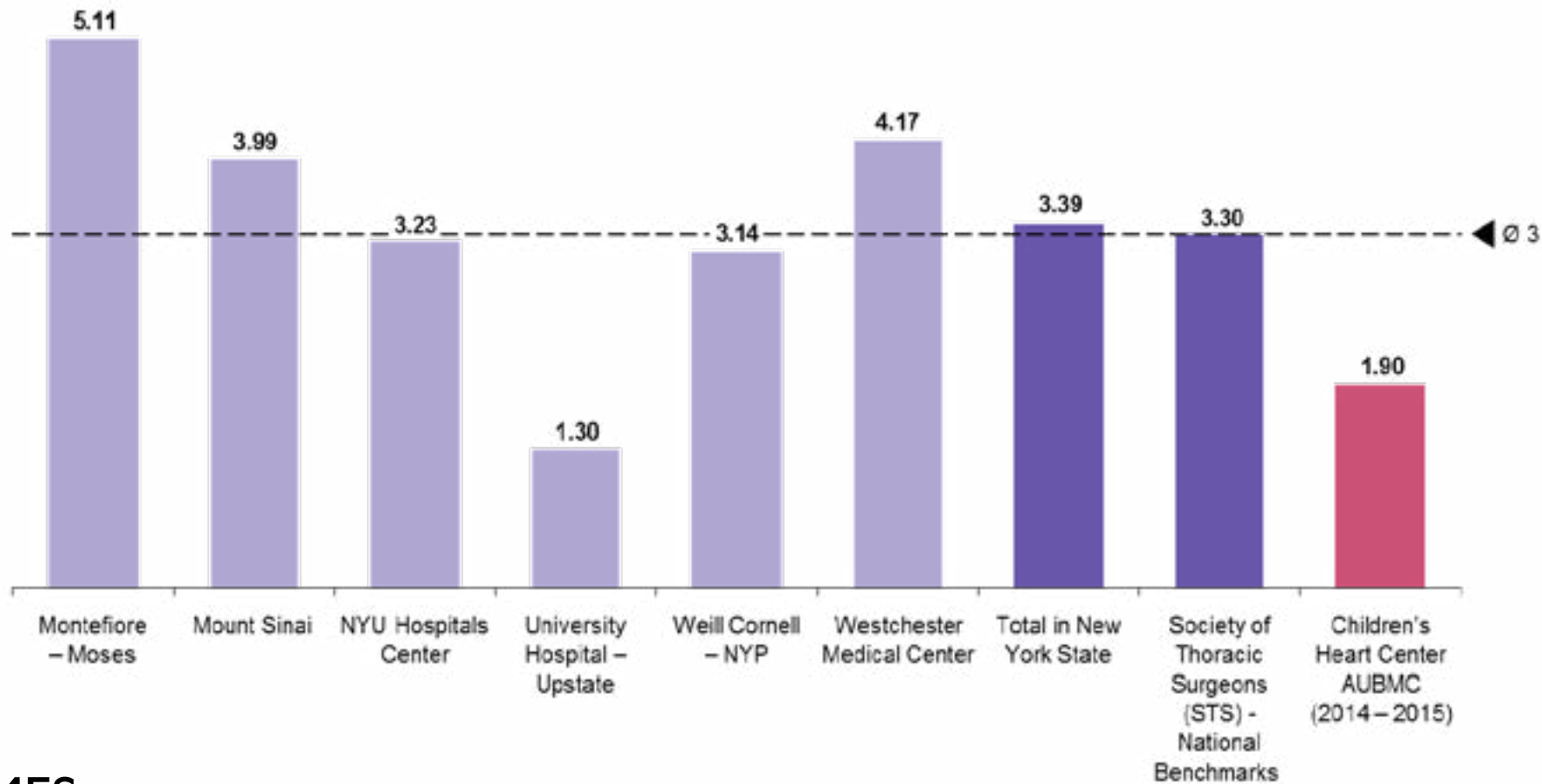
Posted on 6/23/2017



On June 14, 2017, the Children's Heart Center (CHC) at the American University of Beirut Medical Center (AUBMC) joined the elite heart centers in the world by performing its first successful heart transplant for a pediatric patient in Lebanon. The child was 5 years of age. A few days later, the patient was successfully taken off the breathing machine. The child, in good condition, smiled at his mother, held her arm, and asked for a cup of water.

**Establishment clinical programs which resulted in improvements towards the
Care of Thousands of Children with Congenital Heart Disease**





OUTCOMES

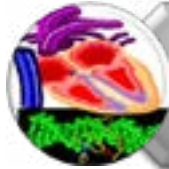
Success Rates for Pediatric Congenital Cardiac Surgery at CHC/AUBMC supported by brave heart is comparable to programs in New York State.

The surgical outcomes of the Children's Heart Center are comparable to the best international benchmarks. We reported a success of about 98%.

BUILDING A DEVELOPED PROGRAM IN A DEVELOPING COUNTRY



Clinical Services



Research



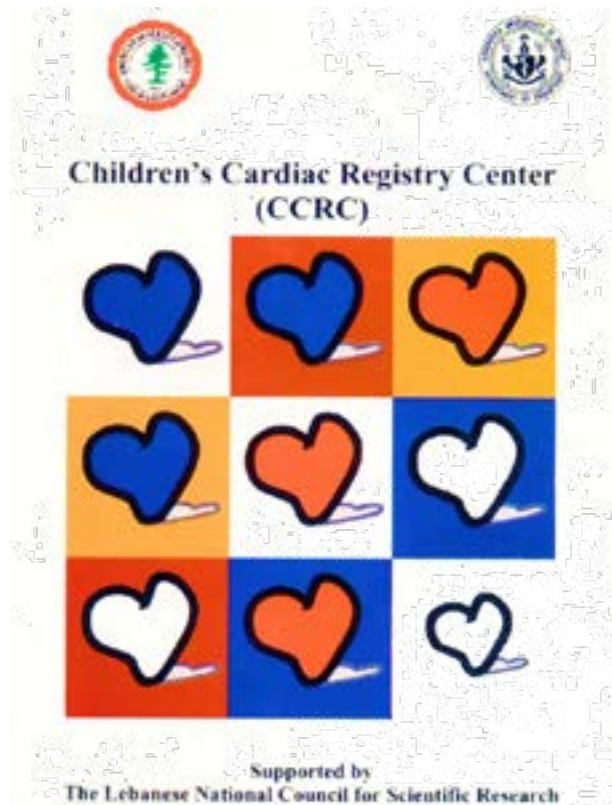
Education and Training



Charitable Organizations

CLINICAL RESEARCH

Established the **First Cardiac Registry Center** in Lebanon and studied the **epidemiology** of CHD and role of **consanguinity** in patients with CHD



American Journal of Medical Genetics 116A:342-347 (2003)

Parental Consanguinity and Congenital Heart Malformations in a Developing Country

Mona M. Nabulsi,^{1*} Hala Tamim,² Maha Sabbagh,³ Mounir Y. Obeid,² Khaled A. Yunis,¹ and Fadi F. Bitar^{1*}

American Journal of Medical Genetics 140(14):1524-30 (2006)

Consanguineous marriage and congenital heart disease : A case control study in the neonatal period.

Yunis KA , Mumtaz G, Bitar FF, Chamseddine F, Kassar M, Rashkidi J, Makhoul G, Tamim H

Cardiac diseases in children in Lebanon: The AUB-MC Children's Cardiac Registry experience. J Med Liban. 2001; 49 (6):304-310 by Bitar et al.

Published data regarding **Rheumatic Fever** and **Bacterial endocarditis**(one of the largest pediatric series in the world), addressing acquired heart diseases that affect children.

Acta Paediatr 89: 427–30. 2000

Paediatric infective endocarditis: 19-year experience at a tertiary care hospital in a developing country

FF Bitar¹, RA Jawdi¹, GS Dbaibo¹, KA Yunis¹, W Gharzeddine² and M Obeid³

Department of Pediatrics¹, Medicine² and Surgery³, American University of Beirut, Lebanon

PAGE 4 AUGUST 2005

INTERNATIONAL EDITION

CONGENITAL CARDIOLOGY TODAY

HIGHLIGHTS FROM THE EASTERN MEDITERRANEAN REGIONAL MEETING ON ESTABLISHING GUIDELINES ON RHEUMATIC FEVER PREVENTION AND CARE, ORGANIZED BY WHO IN YEMEN, MAY 2005

By Gussama Khatib, MD, PhD and Fadi Bitar, MD

Just over 20 regional experts in the field of rheumatic fever were invited to the meeting. The aim of the meeting was to

most frequently among children and adolescents between 5 and 18 years, coinciding with the age distribution of the

*Pediatr Cardiol 21:119–122, 2000
DOI: 10.1007/s002469910017*

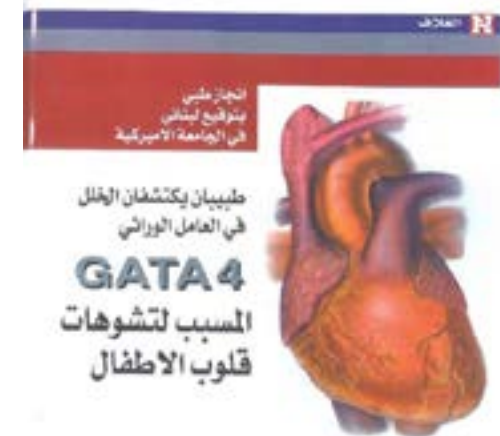
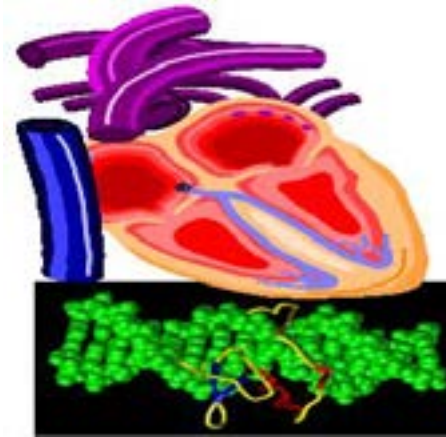
**Pediatric
Cardiology**
© Springer-Verlag New York Inc. 2000

Rheumatic Fever in Children: A 15-Year Experience in a Developing Country

F.F. Bitar,¹ P. Hayek,¹ M. Obeid,³ W. Gharzeddine,² M. Mikati,¹ G.S. Dbaibo¹

BASIC SCIENCE RESEARCH

- Established a pioneering **CHD Genetic Research Program** at **AUBMC** which include **2,000 patients**.



CHILDREN'S HEART CENTER ACHIEVEMENTS – RESEARCH-



Discovery of a novel mutation in the GATA4 gene in patients with Tetralogy of Fallot. This discovery was reported worldwide.



The 3D Printing in Complex Congenital Heart Disease: A New Groundbreaking Achievement for AUBMC/AUB in Lebanon and the Region

2003	2006	2012	2015
------	------	------	------

Received more than 25 national and international research grants, including the Dubai-Harvard Foundation Collaborative Research Award.

A Novel Mutation in the GATA4 Gene in Patients With Tetralogy of Fallot
Journal of the American College of Cardiology, 2006

Discovery of the role of "NFATC1" gene which causes defects in the human heart valves, the first discovery of its kind in the field.



- Reported **worldwide discoveries regarding the genetic causes of CHD**

Developed an **Animal Model of Chronic Hypoxia** Mimicking Cyanotic Congenital Heart Disease



Prostaglandins & other Lipid Mediators 77 (2003) 155–161

PROSTAGLANDINS
& other
LIPID MEDIATORS

Tissue-specific ceramide response in the chronically hypoxic rat model mimicking cyanotic heart disease

Fadi F. Bitar^{a,*}, Salman Mroueh^b, Mohamad El Khatib^b, Hala Bitar^b, Mohammed Tarrabain^b, Marwan El Sabban^c, Mounir Obeid^d, Michel Nasser^{b,*}, Ghassan S. Dbaibo^{a,f}

DNA Cell Biol. 2013 Jun; 32(6): 310–319.

doi: [10.1089/dna.2013.1993](https://doi.org/10.1089/dna.2013.1993)

PMCID: PMC366

Regulation of *De Novo* Ceramide Synthesis: The Role of Dihydroceramide Desaturase and Transcriptional Factors NFATC and Hand2 in the Hypoxic Mouse Heart

[Raed Azzam](#),^{1,*} [Fadi Hariri](#),^{2,†} [Nehmé El-Hachem](#),² [Amina Kamar](#),² [Ghassan Dbaibo](#),^{1,2} [Georges Nemer](#),^{1,2} and [Fadi Bitar](#)^{1,2}



BRADYKININ, 2002, VOL. 16, NO. 10, 891–900



Lack of apoptosis in the hypoxic brain of a rat model mimicking cyanotic heart disease

FADI F. BITAR[†], MARWAN EL SABBAN[‡], HALA BITAR[§], KARIM DIAB[†], SALMAN MROUEH[†], MICHEL NASSER^{§¶}, MOHAMMAD MIKATI^{†#} and GHASSAN S. DBAIBO^{†#}

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CODING AGENCY
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VOL. 16, NO. 10
Printed in USA

Modulation of Ceramide Content and Lack of Apoptosis in the Chronically Hypoxic Neonatal Rat Heart

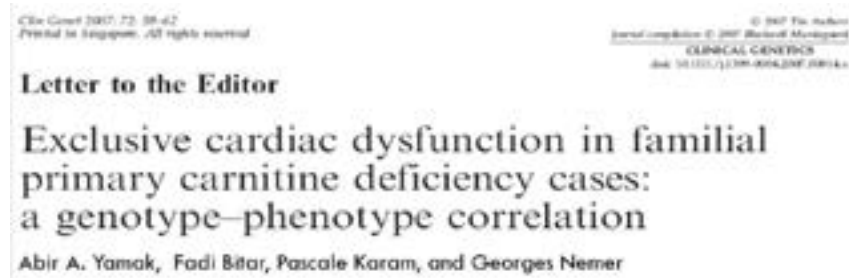
FADI F. BITAR, HALA BITAR, MARWAN EL SABBAN, MICHEL NASSER, KHALID A. YUNE, AYMAN TAMEL, AND GHASSAN S. DBAIBO

EXPERIMENTAL CARDIOLOGY

Cardiac growth patterns in response to chronic hypoxia in a neonatal rat model mimicking cyanotic heart disease

Nahel Aziz MD[†], Michel Nasser MD[†], Marwan El Sabban MD[†], Hala Bitar MD[†], Mounir Obeid MD[†], Ghassan S. Dbaibo MD[†], Fadi F. Bitar MD[†]

CHC team provided new Insights into the **Developmental Biology** of Congenital Heart Disease and described **Novel Genetic Causes** in Cases of Cardiomyopathies

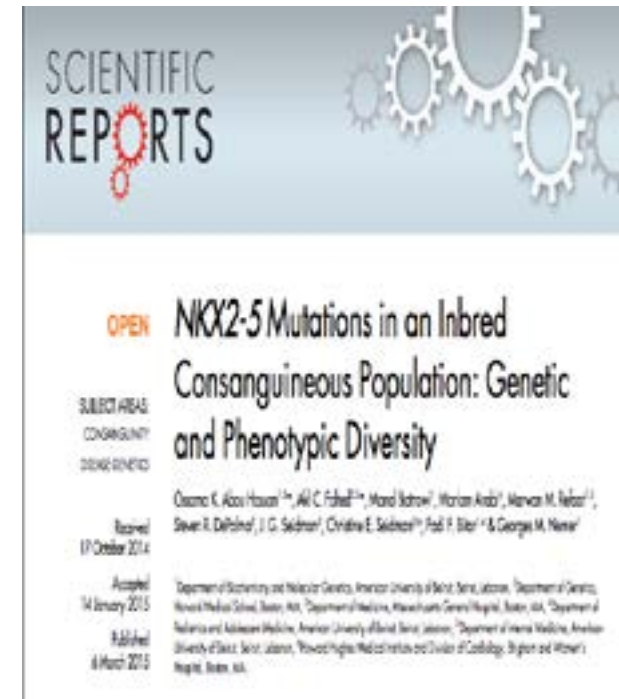


Am J Med Genet A. 2008 Apr 1; 148(7):937-9

Absence of NOTCH2 and Hey2 mutations in a familial Alagille syndrome case with a novel frameshift mutation in JAG1.

E-Rassy I, Bou-Abdallah J, Al-Sitabon S, Bitar F, Nemer G.

Department of Biochemistry, American University of Beirut, Beirut, Lebanon.



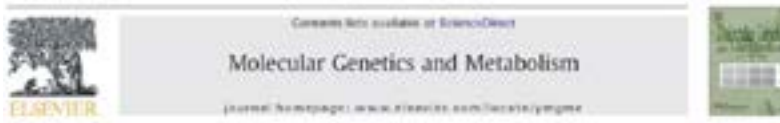
Co-led teams that studied **several Cardiovascular diseases in Lebanon** and contributed to improving our **Understanding of the Genotype and Phenotype of Familial Hypercholesterolemia**

Research
Article
Volume 2017, Article ID 1025261, 7 pages
<http://dx.doi.org/10.1155/2017/1025261>

Research Article

Premature Valvular Heart Disease in Homozygous Familial Hypercholesterolemia

Akl C. Fahed,¹ Kamel Shihbani,¹ Rabih R. Andary,² Mariam T. Arabi,⁴ Robert H. Habib,² Denis D. Nguyen,⁴ Fady F. Haddad,² Elie Moubarak,⁴ Georges Nemer,² Sami T. Azar,³ and Fadi F. Bitar^{1,7}



Homozygous familial hypercholesterolemia in Lebanon: A genotype/phenotype correlation

Akl C. Fahed^{1,2}, Raya M. Safa^{1,3}, Fadi F. Haddad², Fadi F. Bitar^{1,6}, Rabih R. Andary², Mariam T. Arabi⁴, Sami T. Azar^{1,6}, Georges Nemer^{1,8}

Ann Vasc Surg 2014; 28: 421–426

Low-Density Lipoprotein Levels and Not Mutation Status Predict Intima-Media Thickness in Familial Hypercholesterolemia

Akl C. Fahed,^{1,2} Robert H. Habib,³ Georges M. Nemer,² Sami T. Azar,¹ Rabih R. Andary,⁴ Mariam T. Arabi,⁴ Elie M. Moubarak,⁵ Fadi F. Bitar^{3,4} and Fady F. Haddad^{1,6} Boston, Massachusetts, and Beirut and Dahr el Basheh, Lebanon

Mol Genet Genomic Med. 2016 May; 4(3): 283–291.
Published online 2016 Feb 24. doi: [10.1002/mgg3.203](https://doi.org/10.1002/mgg3.203)

PMCID: PMC4867562
PMID: [27247958](https://pubmed.ncbi.nlm.nih.gov/27247958/)

Variable expressivity and co-occurrence of LDLR and LDLRAP1 mutations in familial hypercholesterolemia: failure of the dominant and recessive dichotomy

Akl C. Fahed,^{1,2} Ruby Khalaf,¹ Romy Salloum,¹ Rabih R. Andary,¹ Raya Safa,¹ Inaam El-Rassy,¹ Elie Moubarak,³ Sami T. Azar,⁴ Fadi F. Bitar,⁵ and Georges Nemer^{1,1}



**THESE DISCOVERIES IMPROVED THE CARE OF CHILDREN
WITH CARDIAC DISEASES**





Recipient of 32 national/
international research grants,
including the Dubai-Harvard
Foundation Research Grant

**RECEIVED INTRAMURAL AND EXTRAMURAL RESEARCH FUNDING
AMOUNTING TO ABOUT \$2 MILLION.**

Established a **CHD Research Program** that was the **prototype** to follow in **developing countries** and was presented in several regional and international Meetings

TOP TEN Pearls in Establishing Research Program in Developing Countries

Fadi Hitar, MD
Professor of Pediatrics and Adolescent Medicine and Biochemistry and Molecular Genetics
Director- Children's Heart Center
Co-Director-The CHD Research Genetic Program
Associate Dean for External Medical Affairs
American University of Beirut, Lebanon

President - Pan Arab CHD Association
Co-Founder Brave Heart Fund



Developing a Research Program in The Arab World

The AUBMC - Children's Heart Center Model



Research in Pediatric Cardiology in the Arab World

Lessons Learned



BUILDING A DEVELOPED PROGRAM IN A DEVELOPING COUNTRY



Clinical Services



Research

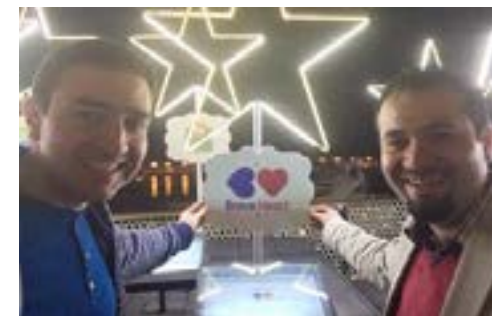
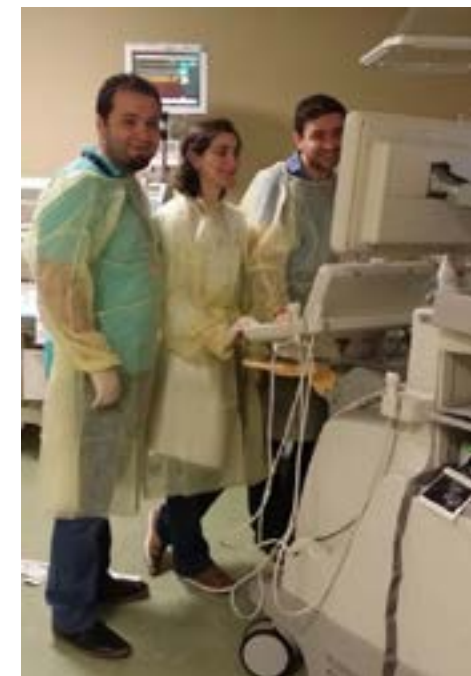


Education and Training



Charitable Organizations

CHILDREN'S HEART CENTER PEDIATRIC CARDIOLOGY FELLOWSHIP PROGRAM



Established **partnerships and networks** at the national, regional and international levels that played a pivotal role in creating a research model for CHD in the Region

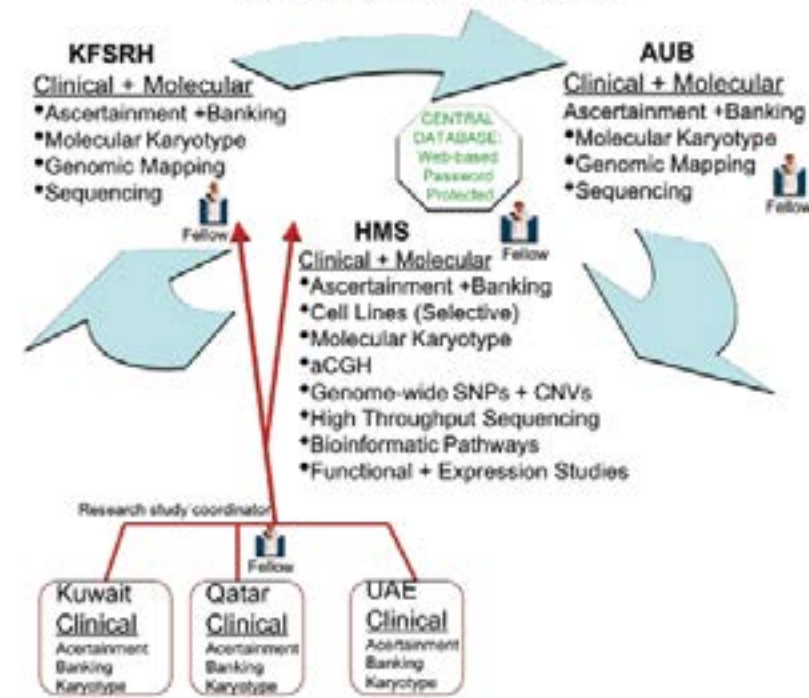
Mutation of IGFBP7 Causes Up regulation of BRAF/MEK/ERK Pathway and Familial Retinal Arterial Macroaneurysms.

Abu-Safieh L, Abboud EB, Alkuraya H, Shamseldin H, Al-Enzi S, Al-Abdi L, Hashem M, Colak D, Jarallah A, Ahmad H, Bobis S, Nemer G, Bitar F, Alkuraya FS.

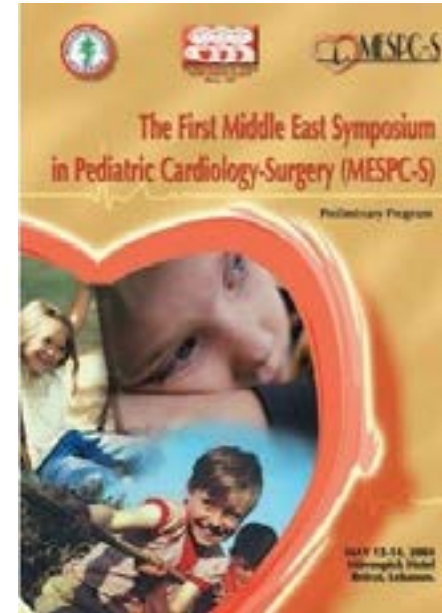
Am J Hum Genet. 2011 Aug 12;89(2):313-9.



DHFMR Collaborative Center for the Genetic Analysis of Congenital Anomalies
Site Work Flow / Personnel



INTERNATIONAL MEETINGS



BUILDING A DEVELOPED PROGRAM IN A DEVELOPING COUNTRY



Clinical Services



Research



Education and Training



Charitable Organizations

CHILDREN'S HEART CENTER GIVING: BHF



THE BRAVE HEART FUND MISSION AND GOALS

BHF Goals

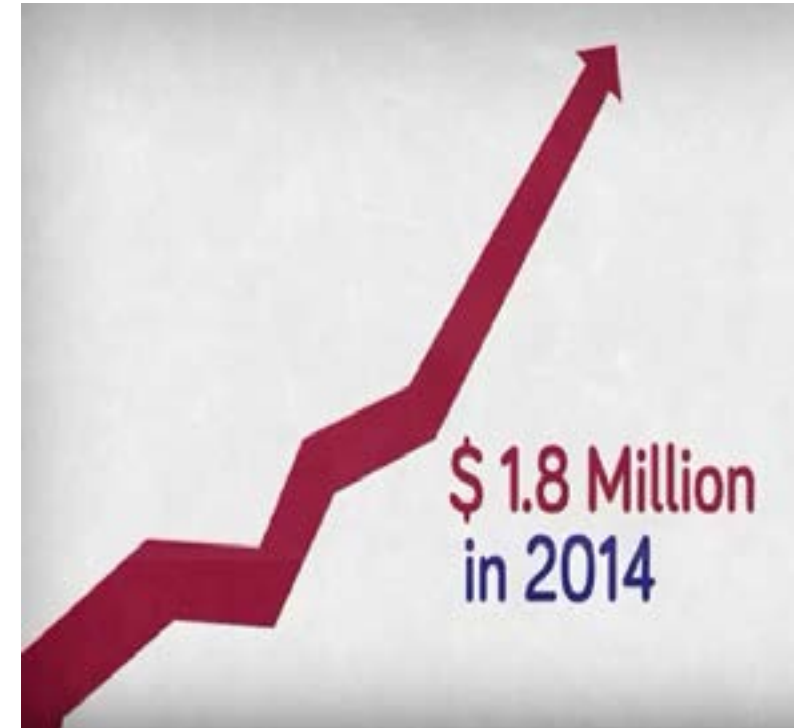
- To provide financial assistance to underprivileged children suffering from CHD
- To increase awareness about Congenital Heart Disease

BHF Mission

“No child should die of heart disease because of a lack of funds”

THE BRAVE HEART FUND ACHIEVEMENTS

- To date, around 3,700 cases of CHD have been treated
- About 365 surgeries and interventional procedures are carried out every year, averaging one surgery/procedure per day.
- As of 2018, the Brave Heart Fund has raised millions of dollars to treat and save the lives of thousands of children with CHD.
- Achieving the 100 percent policy, meaning that 100 percent of donations received are used to cover the cost of surgeries and medical interventions
- Operating at 6 percent administrative overheads covered solely by sponsored events to maintain the 100 percent policy above



THE BRAVE HEART FUND (BHF)

Zero Discrimination, About \$1.8 million spending per year and more than 3700 children treated so far

CHILDREN'S HEART CENTER GIVING: GOLI/ROTARY IN COLLABORATION WITH BHF

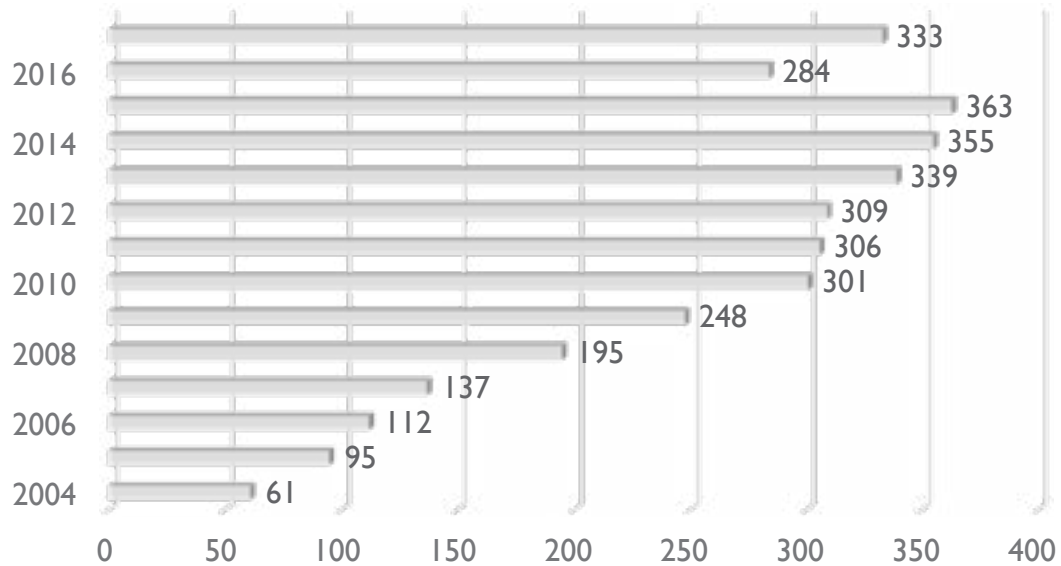


“No child
should die of
heart disease
because of a
lack of funds”

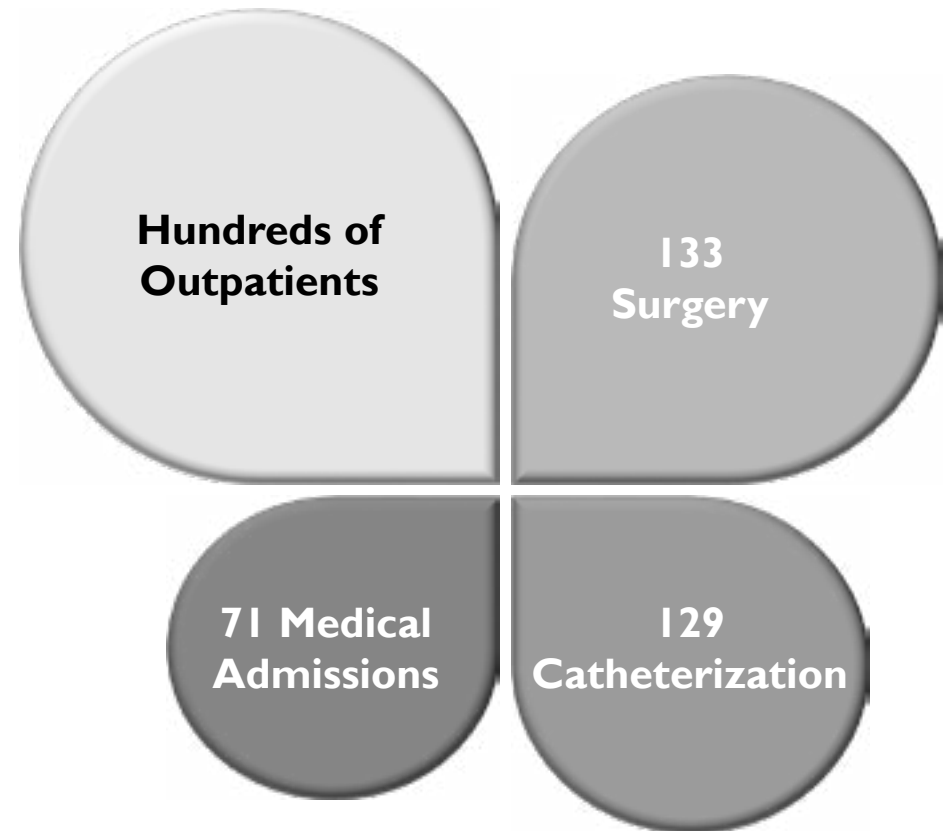


BRAVE HEART FUND (BHF) - FACTS

Yearly Number of Hospital Admissions Covered by the Brave Heart Fund



Type of Cardiac Services Covered by the Brave Heart Fund in 2018



BRAVE HEART FUND AWARENESS CAMPAIGNS



HELP CHILDREN GET THEIR HEARTS BACK (2007)



DON'T SAVE MONEY, SAVE LIVES (2010-2011)



HEART DISEASE CAN END A LIFE BEFORE IT'S EVEN BEGUN
(2008)



THIS IS NOT A FILM. THIS IS REALITY (2014)



BABIES NEED OPEN-HEART SURGERY TOO (2009)



THIS IS NOT A FILM. THIS IS REALITY (2015)

THE BRAVE HEART FUND (BHF) ACTIVITIES



CHILDREN'S HEART CENTER- 90S ELEMENTS OF SUCCESS



Vision



Teamwork



Commitment/Support



Achievements



Giving

CHILDREN'S HEART CENTER- 90S ELEMENTS OF SUCCESS



Vision



CHILDREN'S HEART CENTER- 90S ELEMENTS OF SUCCESS- TEAMWORK



Collaboration
and
Networking

CHILDREN'S HEART CENTER- 90S ELEMENTS OF SUCCESS



Education,
Training,
Partnerships,
Dissemination

CHILDREN'S HEART CENTER COMMITMENT/SUPPORT



Commitment/Support

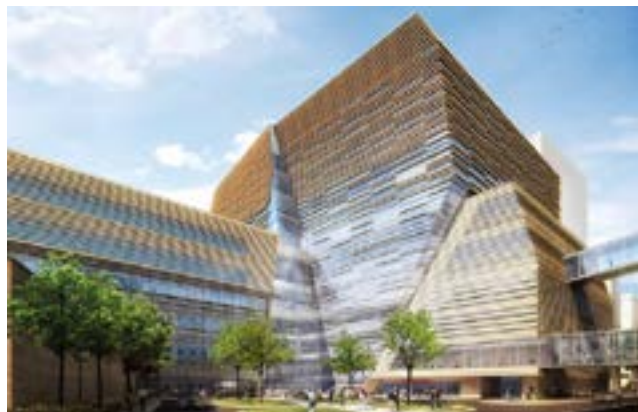


Current Infra – Structure



Human Capital and skills

AUBMC 2020 VISION: COMMITMENT/SUPPORT



CHILDREN'S HEART CENTER ACHIEVEMENTS



Achievements

CHILDREN'S HEART CENTER GIVING: BHF



CHILDREN'S HEART CENTER CHALLENGES



Our achievements are because of the **trust bestowed** upon us by our **patients and their families**



We Accomplish Because We **Function as One Team**



We Succeed Because of The **Love of Our Families and Friends**



Thank You



مركز قلب الأطفال:
عشرين سنة من الإنجازات وقلوب صغيرة عم تنبض حياة

www.aubmc.org



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