BEST CHILDREN'S HOSPITALS
U.S. News & WORLD REPORT
RANKED IN 3 SPECIALTIES 2024-2025

Leading the Way in Kids' Care

Advances in Pediatric Cardiology Research, Diagnosis and Treatment

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Ochsner Children's Hospital

LONG LIVE YOU

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Leading the Way in Kids' Care

No Disclosures

Hot Topics in Pediatric Cardiology

- Pediatric Heart Network
- Cardiac surgery
- Catheter-based and Hybrid interventions
- Pacemakers
- Genetics, biomarkers, and regenerative advances
- Neuromonitoring and cerebral protection
- Rehabilitation
- Dysautonomia
- Kawasaki disease
- Telemedicine
- Wearable biosensors
- Global health

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Pediatric Heart Network

Search

About PHN | Families & Participants | Providers & Researchers | Our Studies | Datasets

The Pediatric Heart Network (PHN) is a consortium of leading hospitals across the United States, Canada, and other countries that conducts research in children and families living with congenital heart disease, adults living with congenital heart disease, and children affected by acquired heart disease.

Ochsner Children's Hospital

Completed

- **SVR Trial:** right ventricular to pulmonary artery shunt (RVPA) vs. Modified Blalock-Taussig Shunt (MBTS) for Stage I Norwood – RVPA better survival (but more complications) in first 12 months, no difference in longer term followup
- **ISV:** Infant Single Ventricle Enalapril vs Placebo Trial – No Benefit
- **SV/Digoxin:** Retrospective study assessing relationship between digoxin use and mortality in single ventricle interstage period – Digoxin is associated with decreased mortality
- **Kawasaki Disease:** Methylprednisolone vs Placebo Trial – No Benefit
- **Marfan:** Atenolol vs Losartan Trial – No Difference
- **FUEL/FALD:** Can udenafil improve heart function and exercise in children who had a Fontan operation – Some Positive Effect
- A Phase I Study of **Dexmedetomidine** Bolus and Infusion in Infant Cardiac Surgery: Safety and Pharmacokinetics – Safety Confirmed
- **Echo Z-Score & Normal Electrocardiogram**

Active

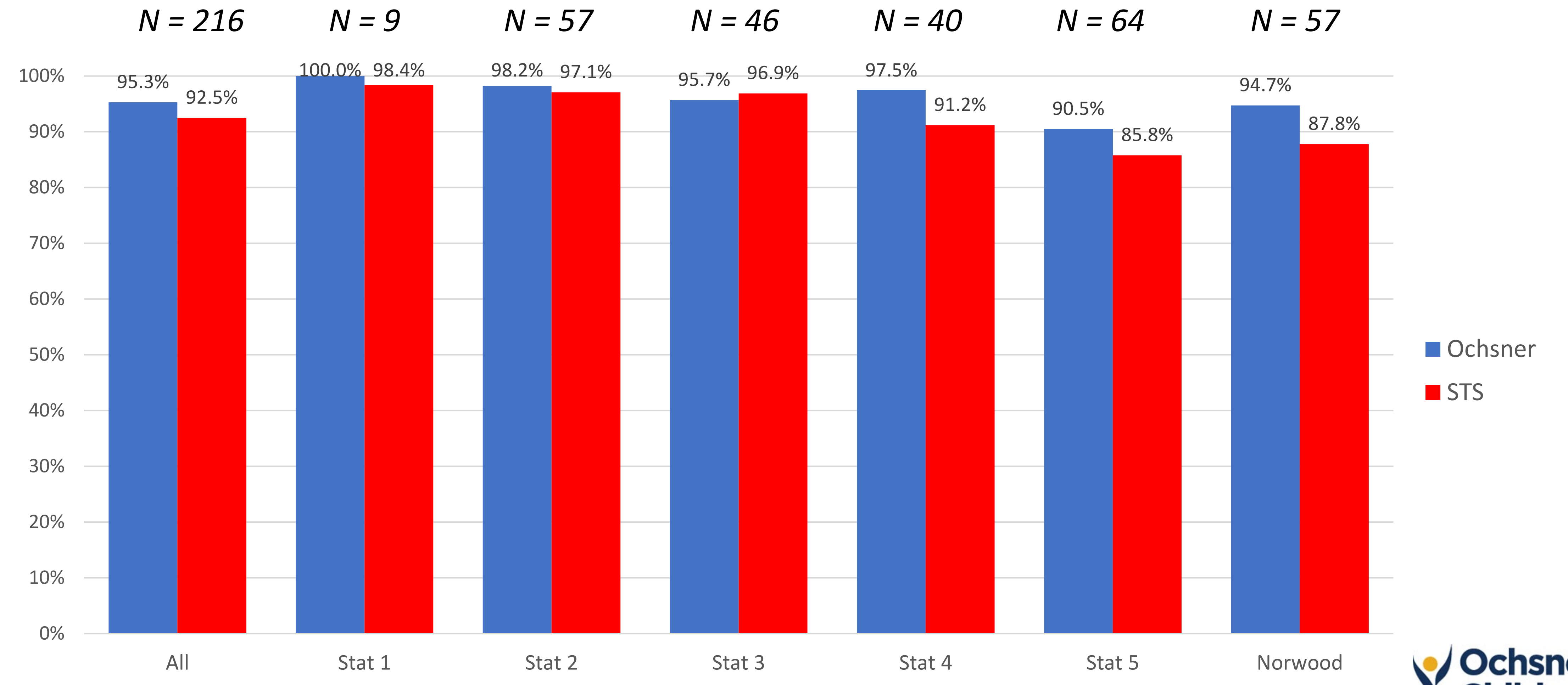
- **CAMP**: Low-Interventional cohort study of Myocarditis/Pericarditis associated with COMIRNATY (COVID Vaccine)
- **CHILD-DS**: Congenital Heart disease: Impact on Learning and Development in Down Syndrome
- **COMPASS**: COmparison of Methods of Pulmonary blood flow Augmentation in neonates: Shunt versus Stent
- **DO IT!:** Can pitavastatin lower cholesterol in obese children and adolescents
- Is **oxandrolone** safe and tolerated in newborns with single ventricle heart defects who have undergone a Norwood procedure?
- **SVRIII**: This is a second follow-up of the trial which aimed to see which shunt type was best for infants with single ventricle heart defects undergoing the Norwood operation. The purpose of this study is to see which type of shunt is most effective by later school age.

Pediatric Cardiac Surgery

- Improved neonatal and single ventricle outcomes
- Dedicated pediatric (and neonatal) cardiac intensive care units
- 3D Printing for surgical planning
- Minimally invasive surgery
- Biodegradable and growth-adaptive implants
- Mechanical support for heart failure

Ochsner Neonatal Open-Heart Surgery
Survival Rates: 2016 – 2025

Ochsner's survival rates are among the highest in the US when comparing to STS national averages. This is most significant for highest risk operations (STAT 4 and 5) including Stage 1 Norwood Operation

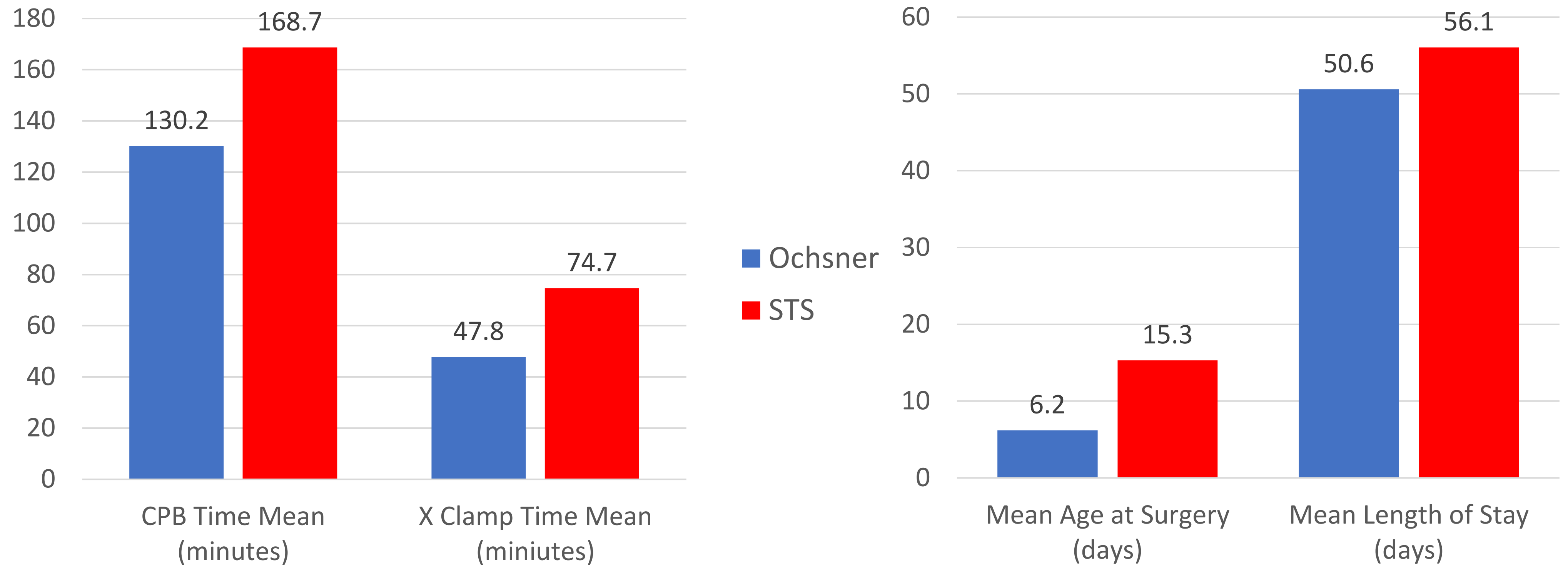


Ochsner Stage I Norwood Operations (N = 57)

Surgical Times and Hospital Days: 2016 - 2025

Ochsner's CPB and X-Clamp times are shorter than national STS average

Ochsner operates earlier and has lower length of stay than national STS average



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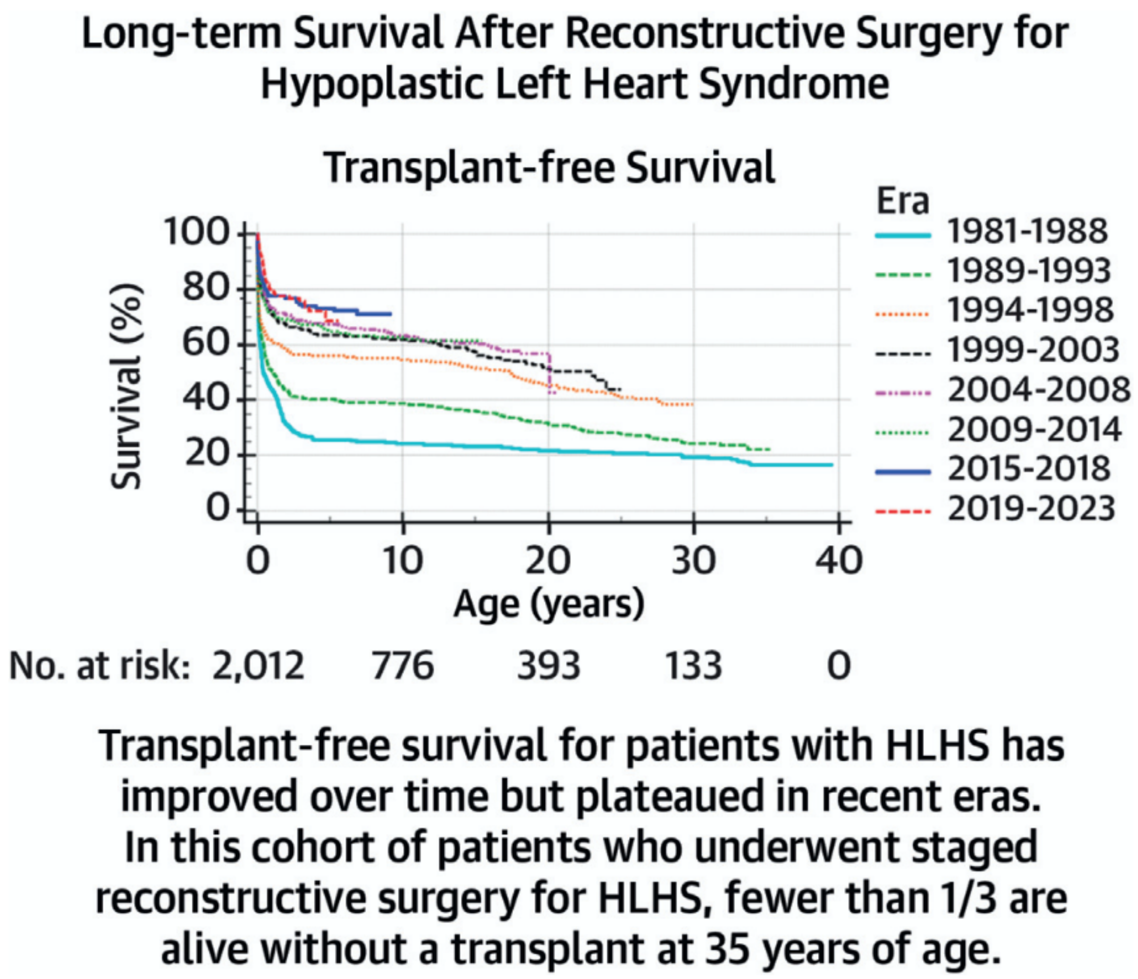
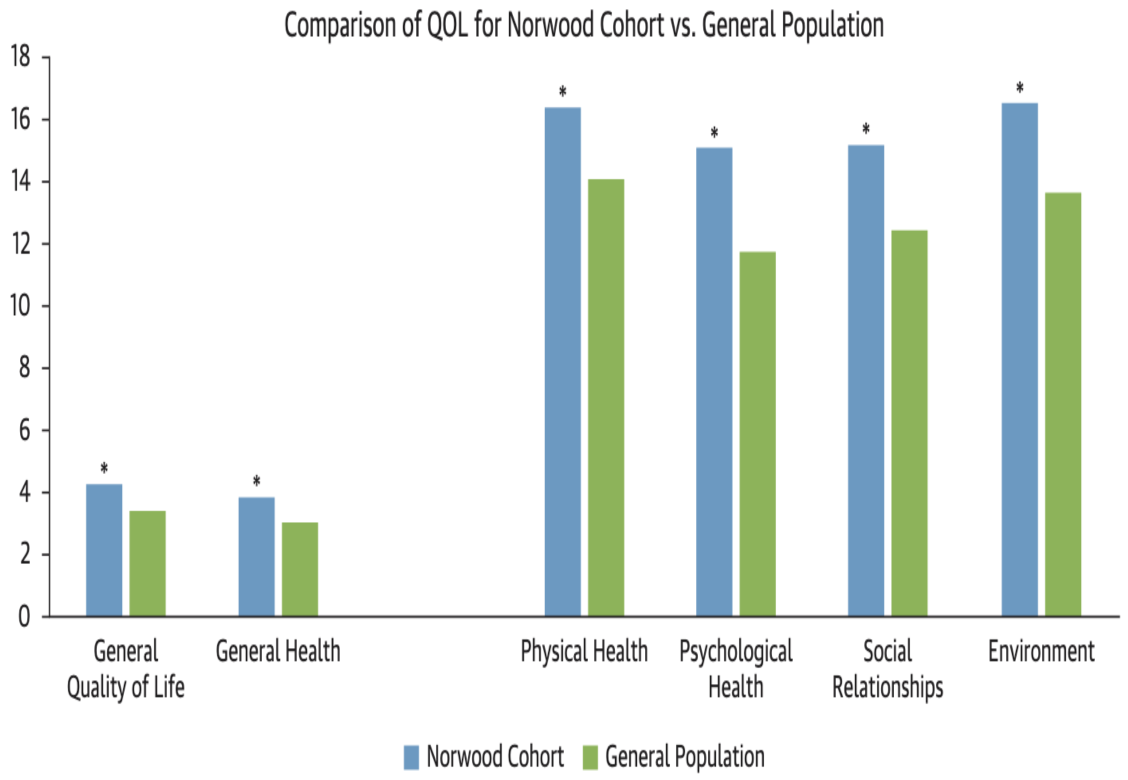
Hypoplastic Left Heart Syndrome

Long Term Outcomes





Gaynor JW, et al. JACC. 2025;85(24):2386–2398

Pediatric and Neonatal Cardiac Intensive Care

- Enhance … py):
- Improve
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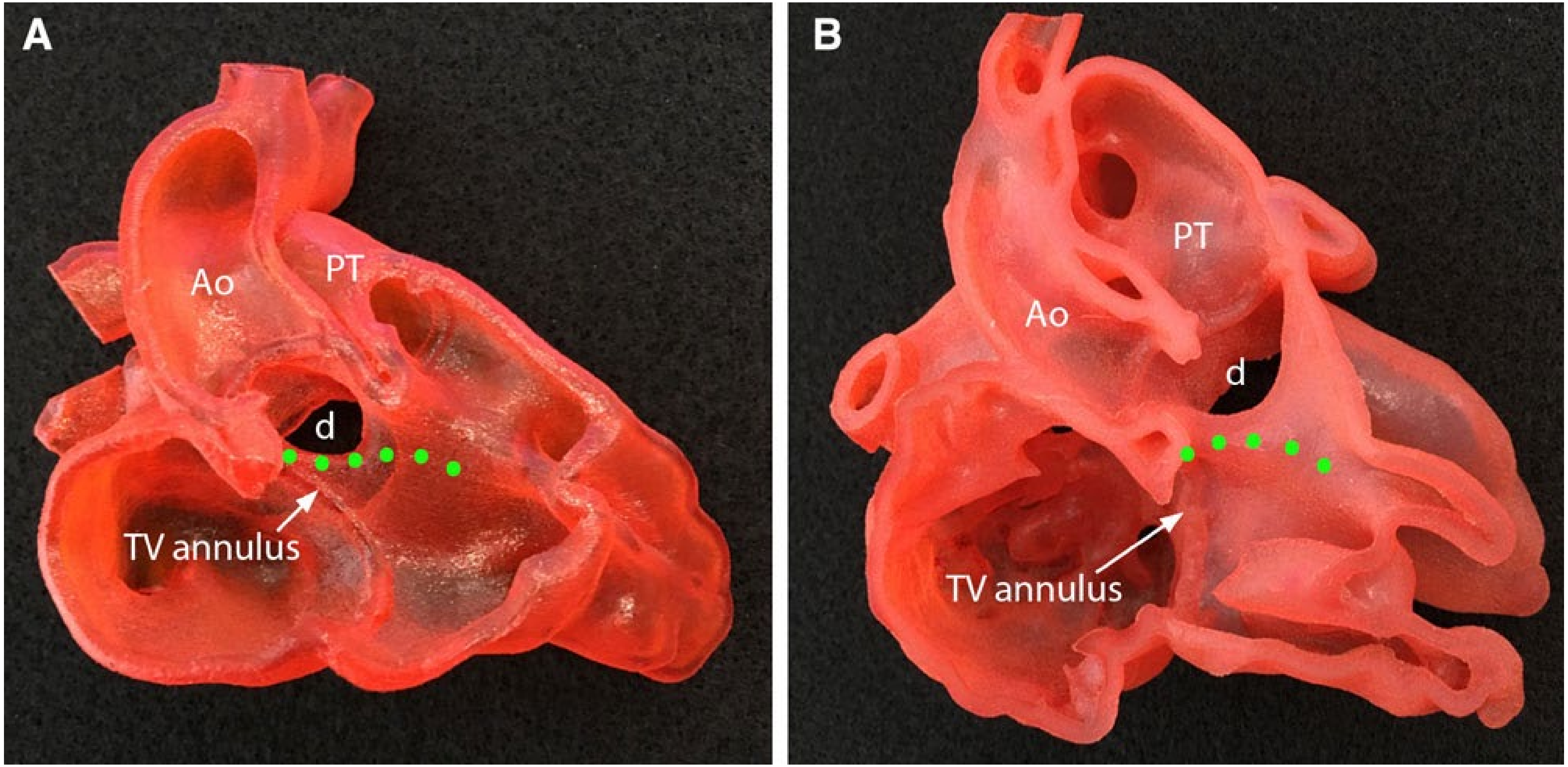
- Advance … ..)
- Focus on
  - Emp
  - Self-
- Multicen
  - Regis
  - Know
- Training

3D Printing

Surgical Planning for Double Outlet Right Ventricle



Minimally Invasive Surgery

- Procedure and recovery times
- Pain
- Cardiopulmonary bypass strategy
- Thoracoscopic and robotic approaches
- Defects
  - Atrial septal defect
  - Ventricular septal defect
  - Anomalous pulmonary venous return
  - Vascular rings

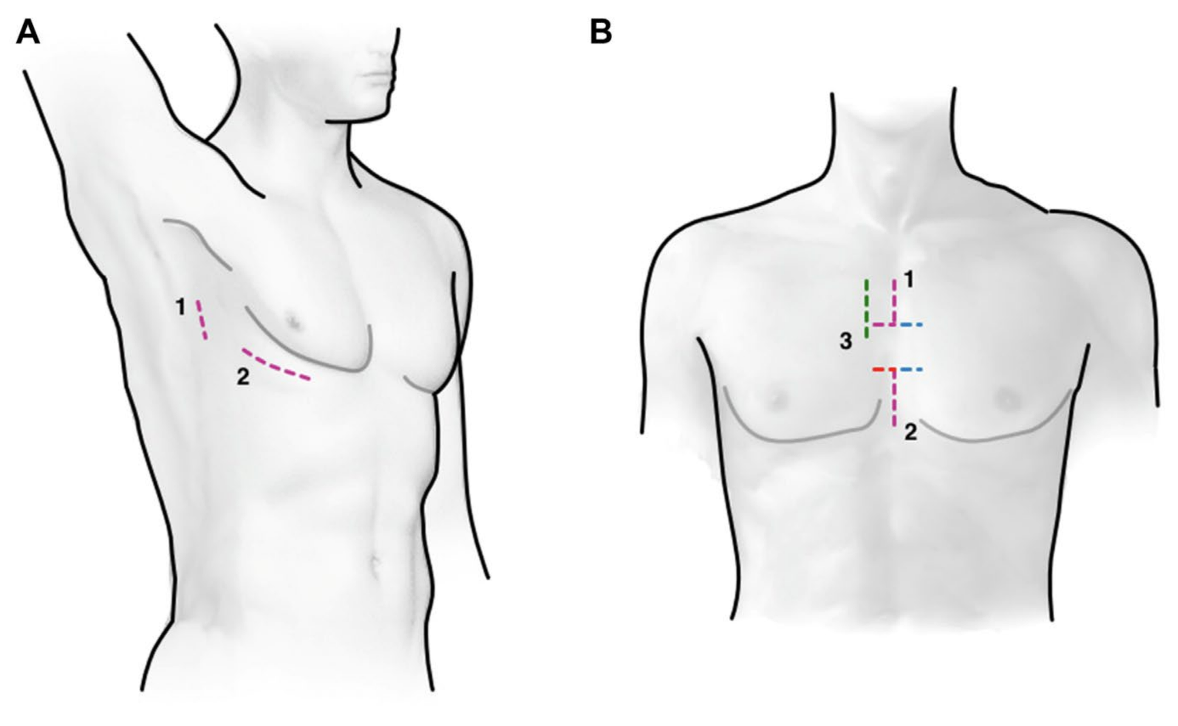


FIGURE 1 Commonly used minimally invasive incisions. (A) Right vertical thoracotomy (1) and anterolateral thoracotomy (2). (B) Superior partial sternotomy with right, left, or bilateral extension into adjacent intercostal space (1), sternal split or lower partial sternotomy with right, left or bilateral extension into adjacent intercostal space (2), and parasternal incision (3).

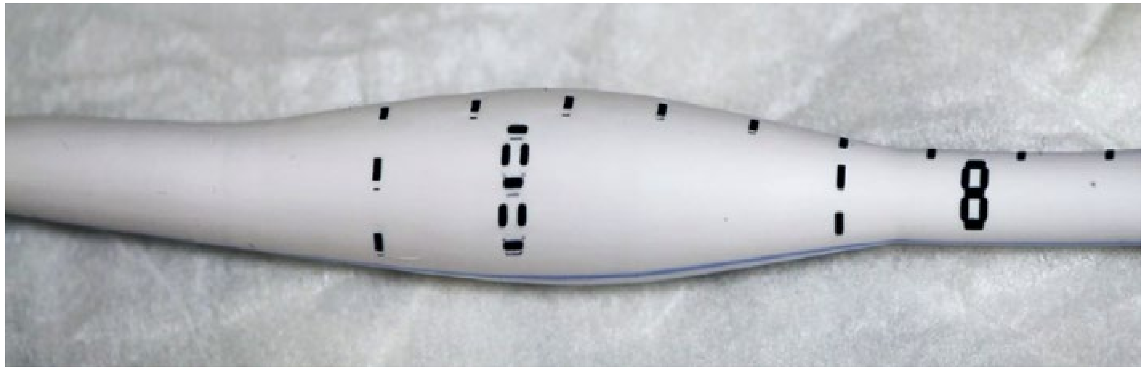
Biodegradable and Growth-Adaptive Implants

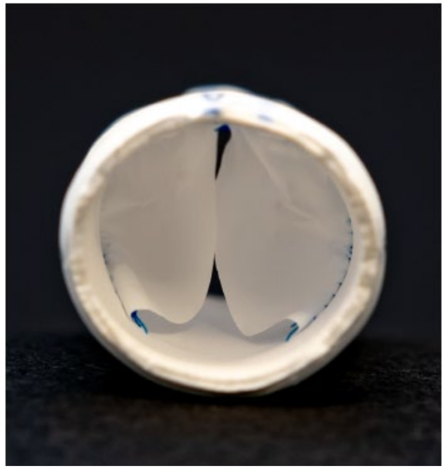
Autologous and Decellularized Tissue Engineered Heart Valves

- Autologous vascular cells seeded on a biopolyester scaffold in vitro
- Autologous ovine bone marrow-derived mesenchymal cells seeded onto a bioresorbable scaffold
- Autologous endothelial, smooth muscle, and fibroblast cells seeded on patient-derived fibrin scaffold in vitro
- Autologous ovine bone-marrow-derived stem cells seeded onto a bioresorbable scaffold integrated into a self-expanding stent
- Decellularized heart valve fabricated on a bioresorbable nitinol stent scaffold with human vascular-derived fibroblasts
- Decellularized heart valve engineered on a rapidly degrading synthetic scaffold with autologous vascular-derived cells
- Decellularized valve engineered in vitro from human neonatal dermal fibroblasts on a bioresorbable PGA scaffold with integrated Valsalva sinuses
- Decellularized tubular valve engineered in vitro from autologous ovine dermal fibroblasts with degradable sutures
- Decellularized tubular valve engineered on a collagen scaffold with ovine dermal fibroblasts
- Decellularized human pulmonary valve allograft reseeded with autologous endothelial progenitor cells
- Decellularized xenograft using Matrix P plus (decellularized porcine pulmonary valve)
- Decellularized xenograft using Matrix P and Matrix P plus pulmonary valves
- Decellularized pulmonary valve homograft
- Decellularized aortic allograft
- Synergraft™ valve: Decellularized porcine heart valve
- ARISE trial: Decellularized aortic allograft
- Computationally inspired in vitro design of decellularized TEHV seeded with myofibroblasts
- Pulmonary valve with scaffold created from a bioresorbable novel supramolecular elastomer based on bis-urea-modified polycarbonate
- Xeltis pulmonary valve made of bioresorbable supramolecular 2-ureido-4[1H]-pyrimidone

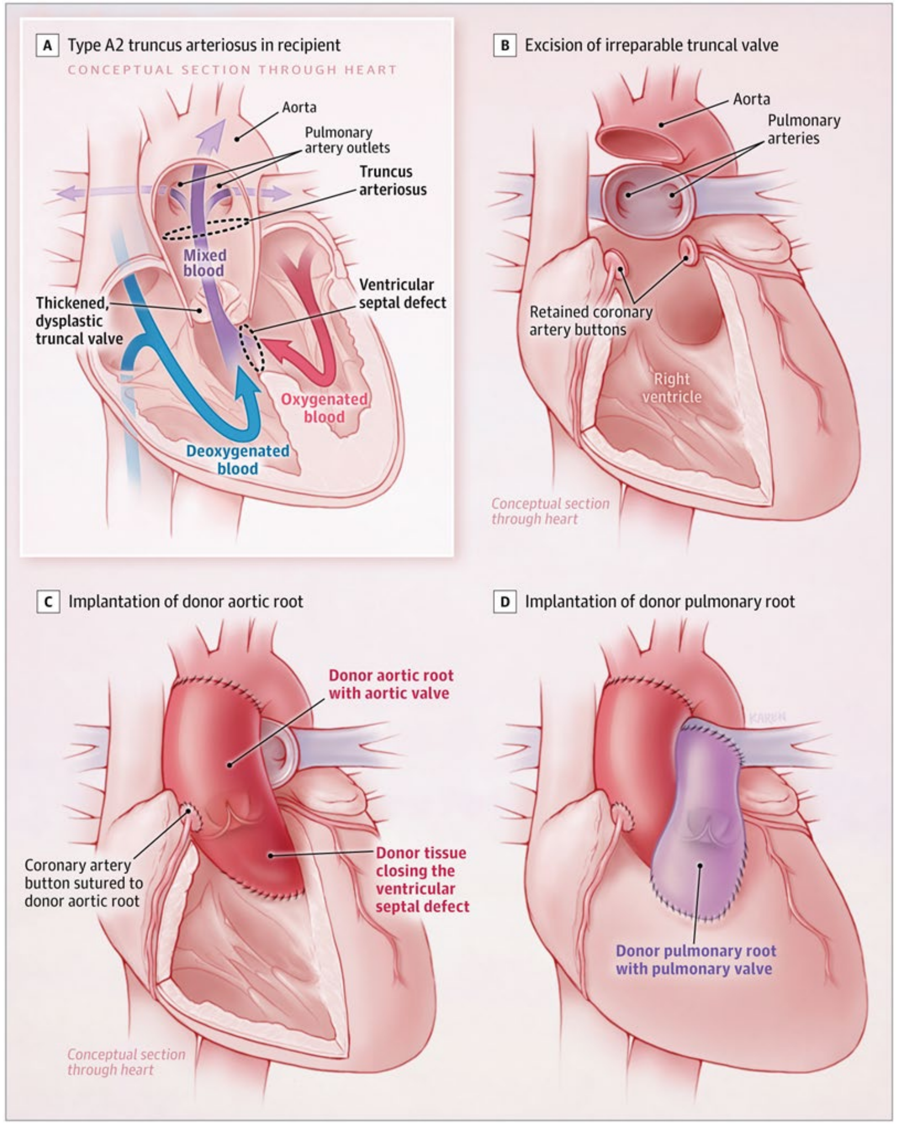
Polymer Grafts and Valves

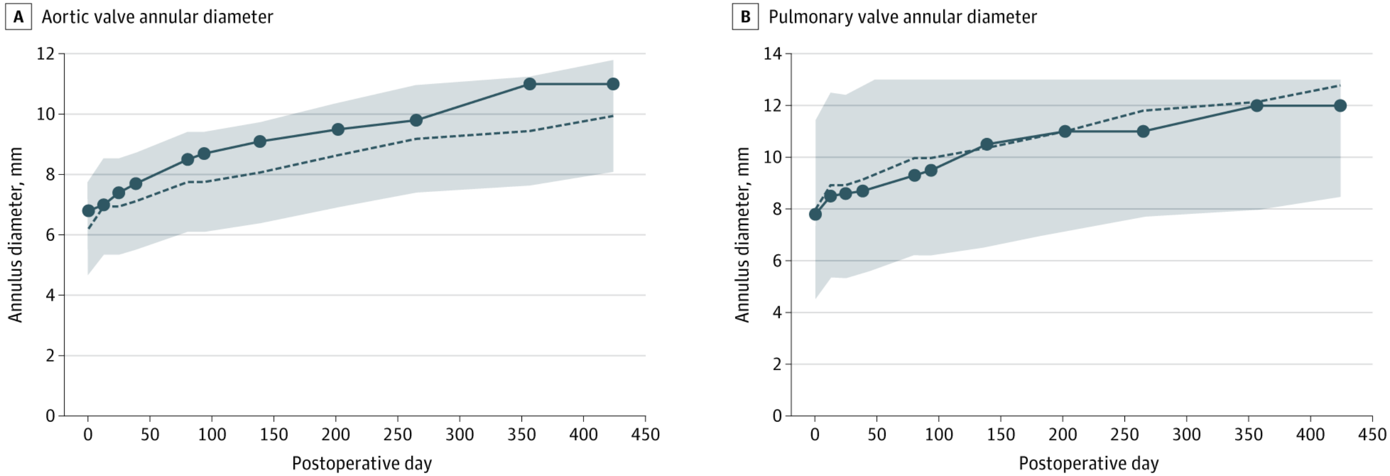
- Expandable Grafts and Bi/Trileaflet polymeric valves with leaflets made of 0.1 mm expanded polytetrafluoroethylene coated with phosphorylcholine
- Balloon/stent-expandable
- Procedures
  - Aorto-pulmonary shunt
  - Fontan
  - Pulmonary valve/aortic valve replacement

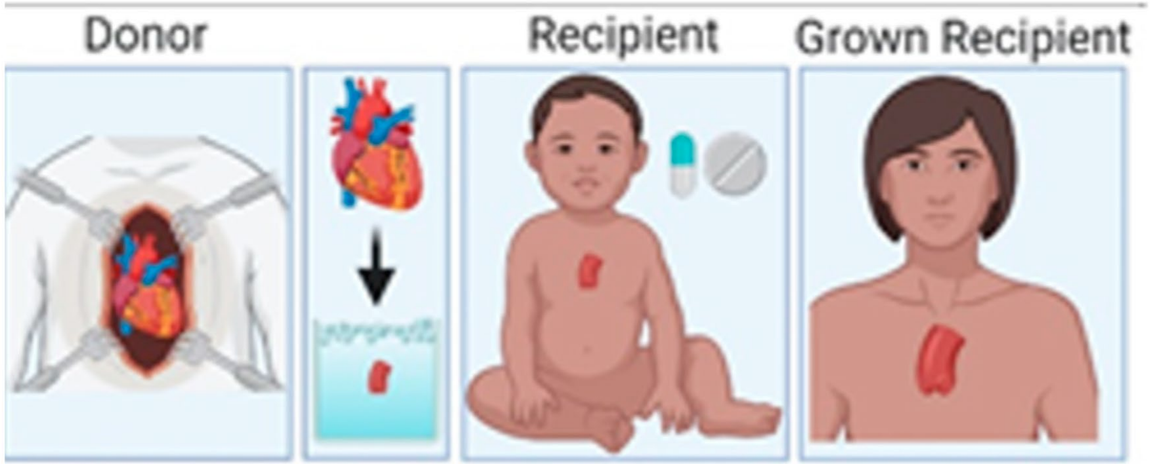




Partial Heart Transplantation







Mechanical Support Devices

- Extracorporeal membrane oxygenation (ECMO)
- Ventricular assist devices (recovery, bridge to transplant, destination therapy): LVAD, RVAD, or BiVAD
  - Implantable
    - Pulsatile: Berlin Heart EXCOR®, approved for infants
    - Continuous flow: HeartMate 3, INCOR, used in older patients
    - Centrifugal pumps: CentriMag™ PediMag™, shorter term
  - Percutaneous (Microaxial Pump): Impella, smaller, temporary
- Total artificial heart

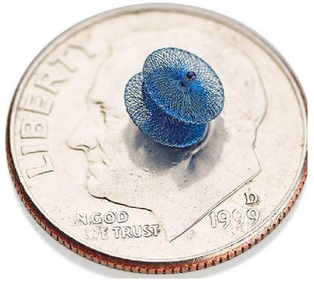
Catheter-based and Hybrid Interventions

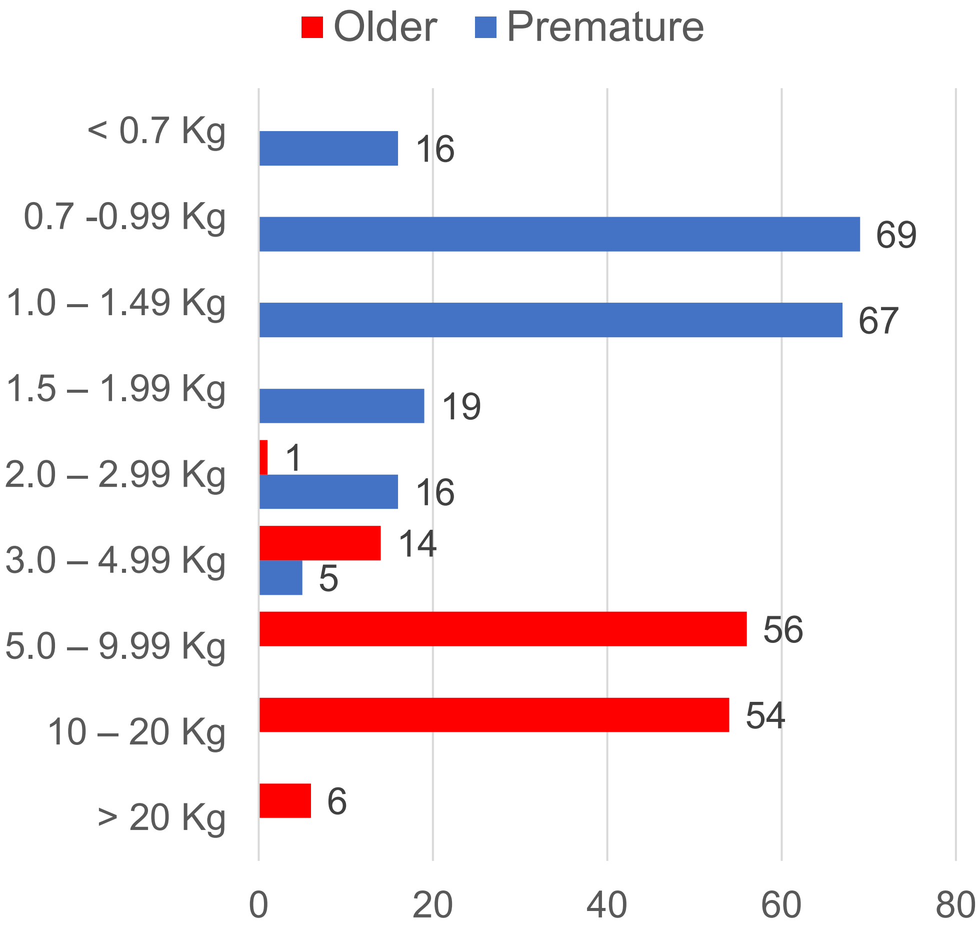
- Premature PDA closure
- Transcatheter valve placement
- New devices: occluders for ASD/VSD
- Hybrid cardiac procedures combining surgery and cath lab
- Fusion navigation systems reduce fluoroscopy and improve accuracy
- Fetal intervention

PDA/Piccolo Cath Closure: 2019 – 2025

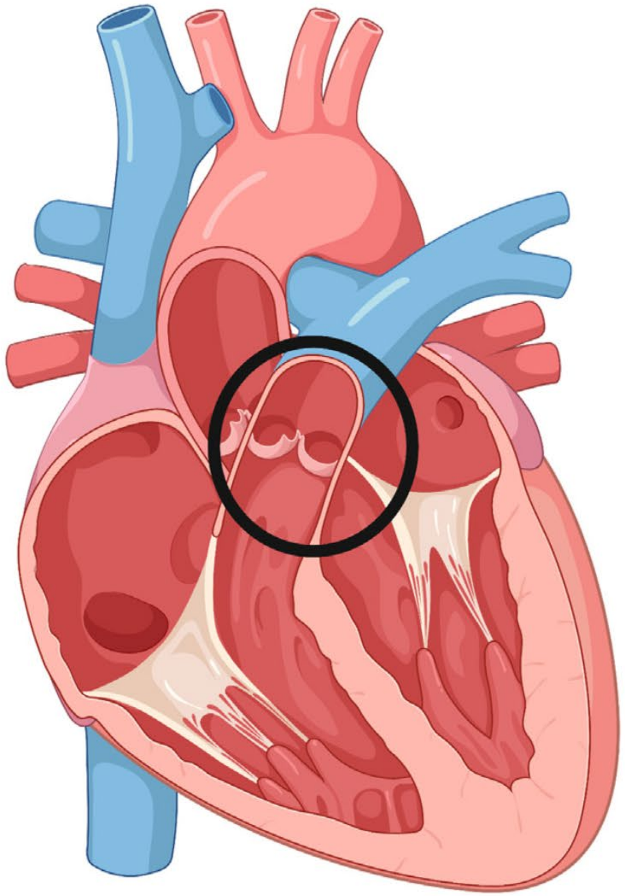
Largest Premature PDA Experience in US

	Premature (192)	Older (131)
Baptist (Community Hospital)	181	0
Age (months)	1.20 ± 0.73	18.9 ± 15.6
Weight (Kg)	1.22 ± 0.69	10.2 ± 4.79
Gestational age (weeks)	25.0 ± 2.17	N/A
Birth weight	0.73 ± 0.26	N/A
Procedure time (minutes)	43.6 ± 22.6	55.4 ± 29.2
Fluoroscopy time (minutes)	7.33 ± 8.38	9.66 ± 10.2
Contrast (cc)	2.60 ± 2.49	30.4 ± 11.9
Blood loss (cc)	1.89 ± 1.72	3.86 ± 1.49
Procedure Related Mortality	1	0
Follow-up time (months)	15.4 ±.16.8	13.5 ± 17.1
Residual shunt		
None	190	130
Small	2	1
Moderate/large	0	0
Left pulmonary artery branch stenosis		
None	189	127
Mild	3	4
Moderate/severe	0	0
Coarctation		
None	187	129
Mild	5	2
Moderate/severe	0	0



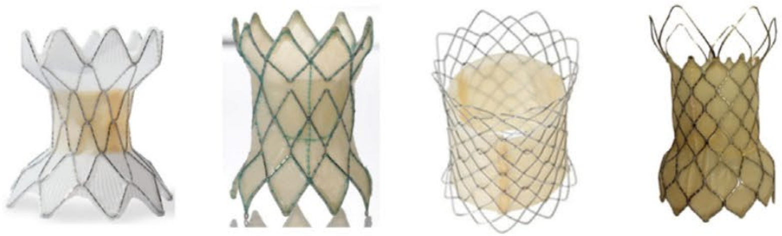


Transcatheter Pulmonary Valve Placement

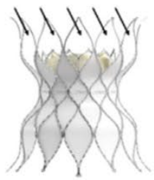


Balloon Expandable Valves

Self-expanding Valves

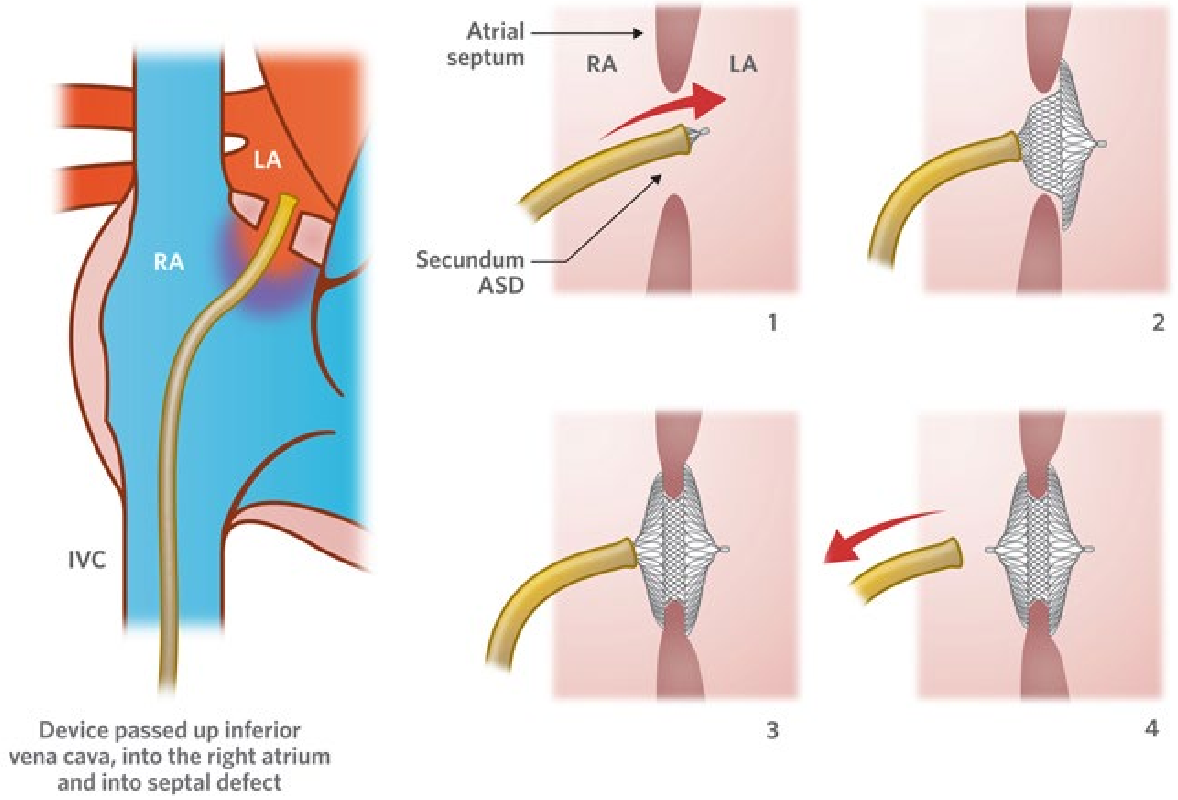


Self-expanding Prestent

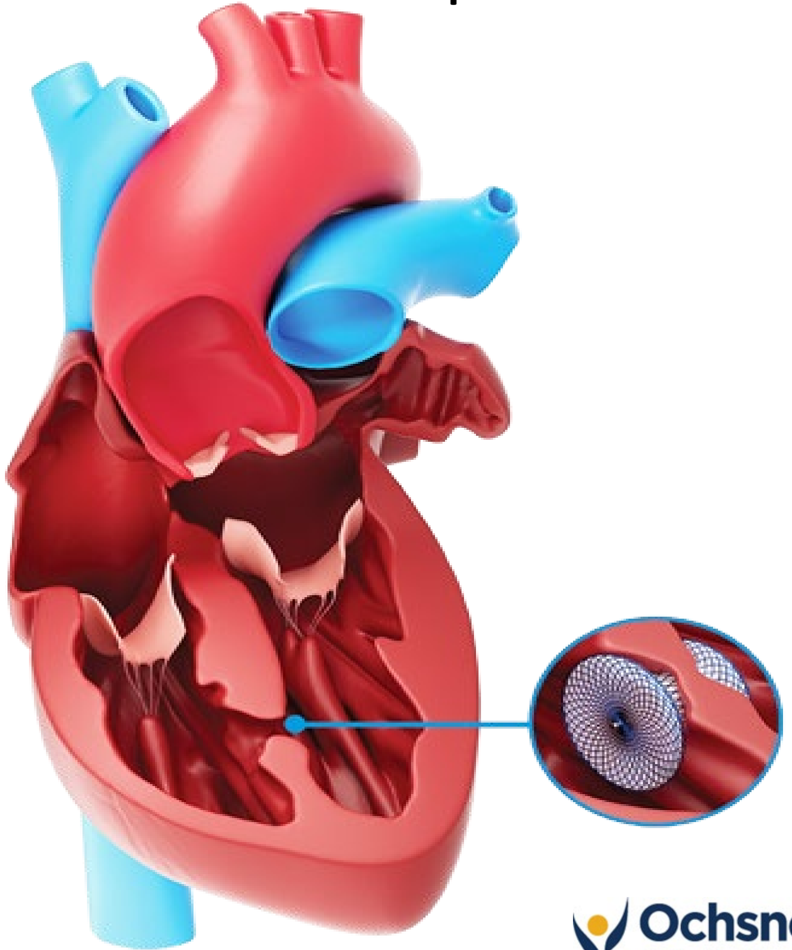


Septal Occluder Devices

Atrial Septal Defect



Ventricular Septal Defect



Hybrid (Surgery and Catheterization) Procedures
Hypoplastic Left Heart Syndrome: Stage I Palliation

Patent duc
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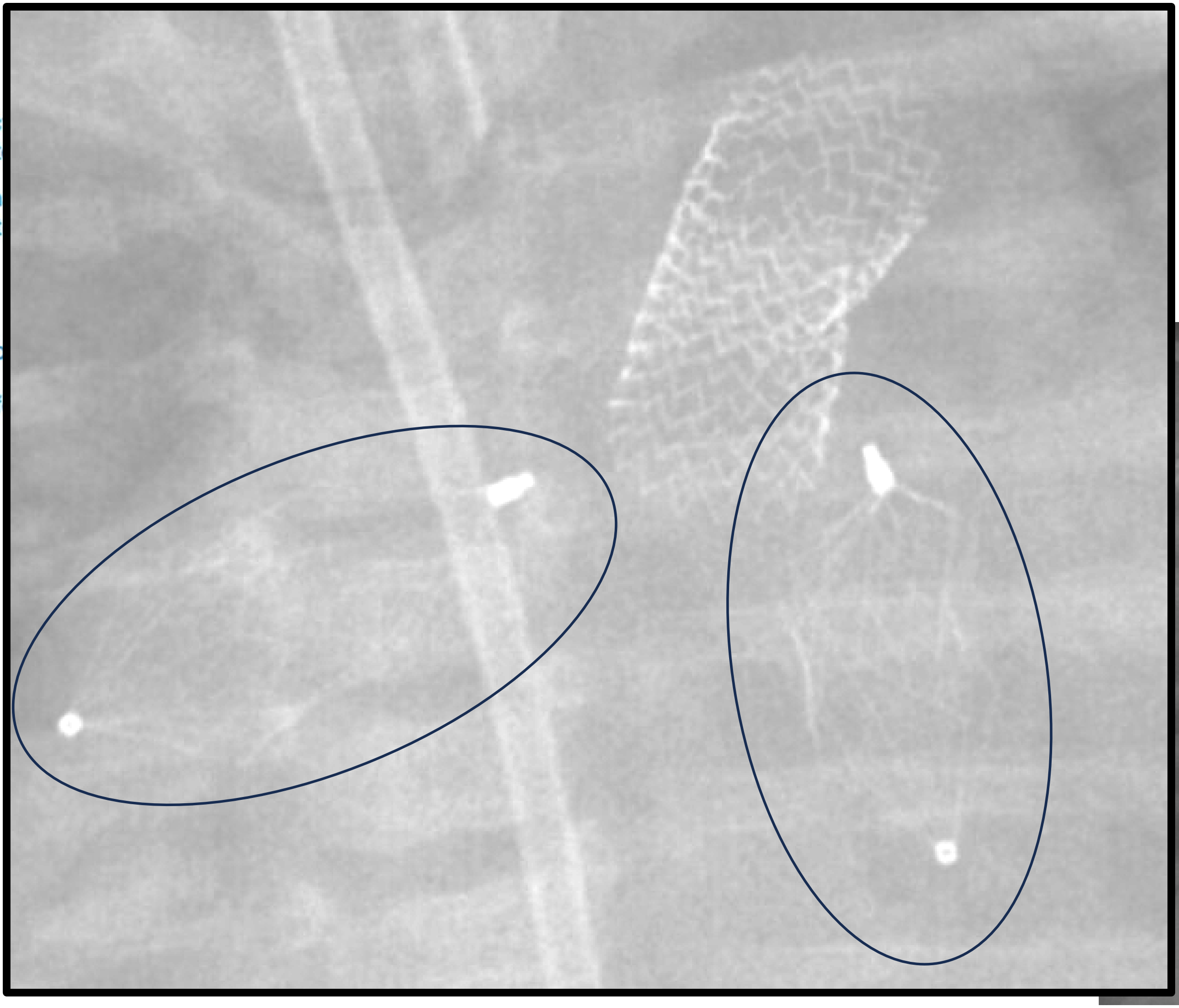
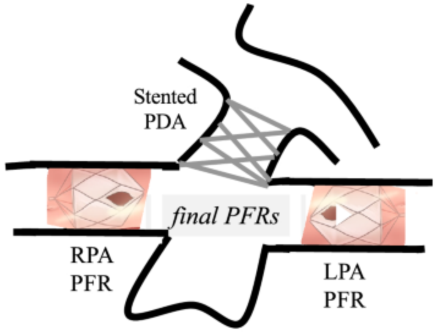
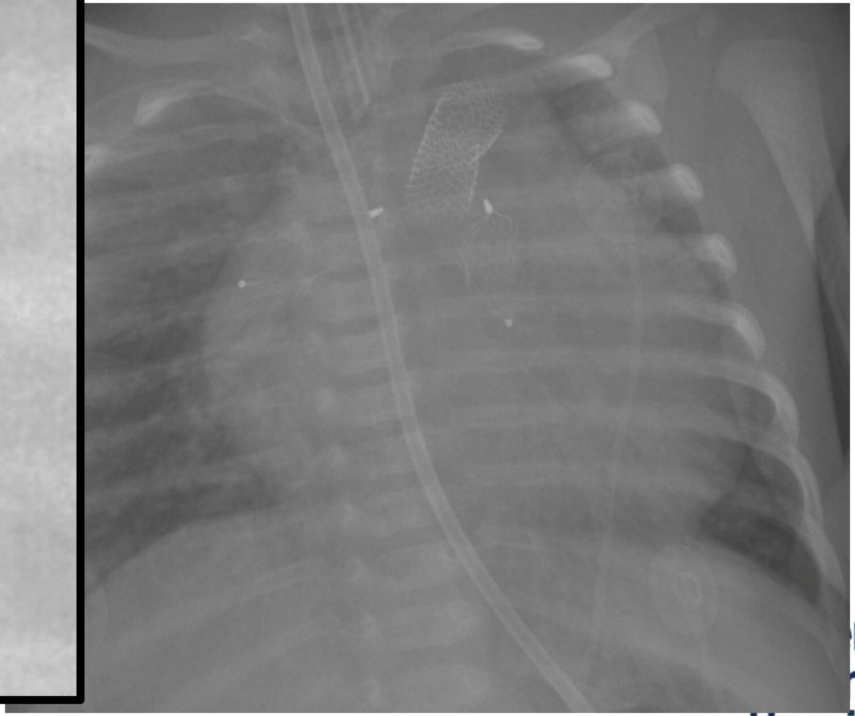
Banded pulmon
art

Small hypoplastic ac

Atrial septal def







Fusion Navigation Tools

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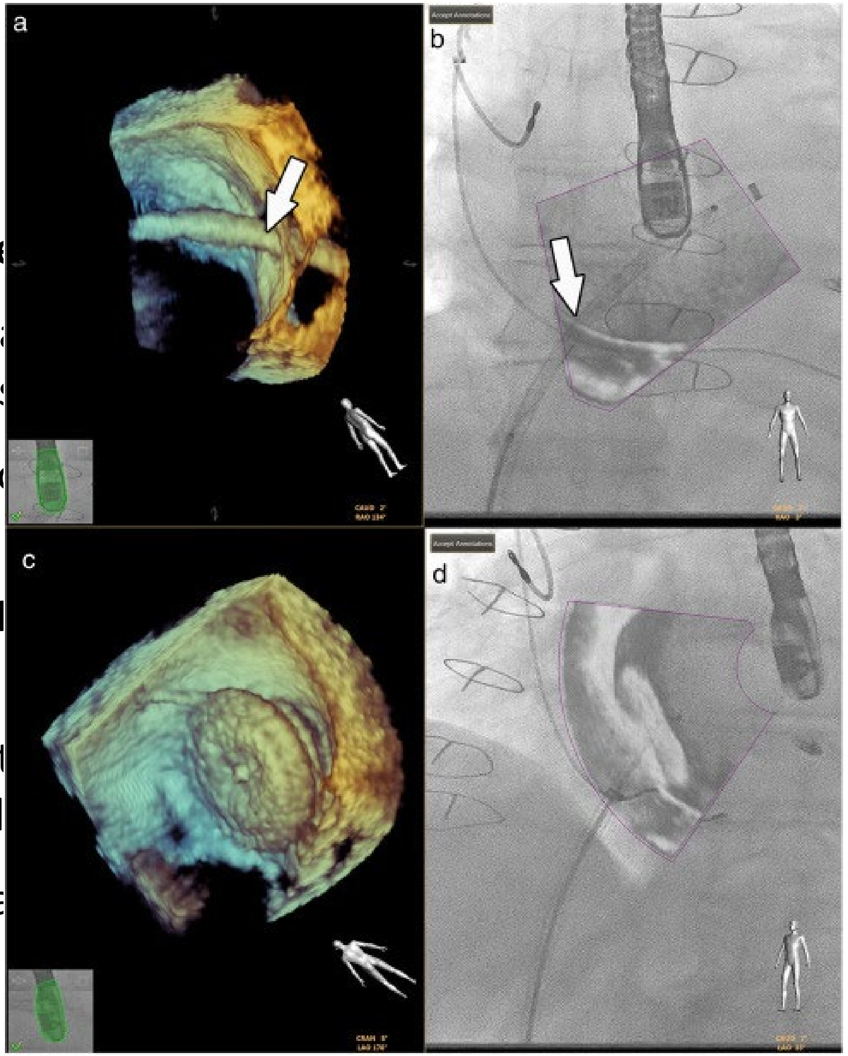
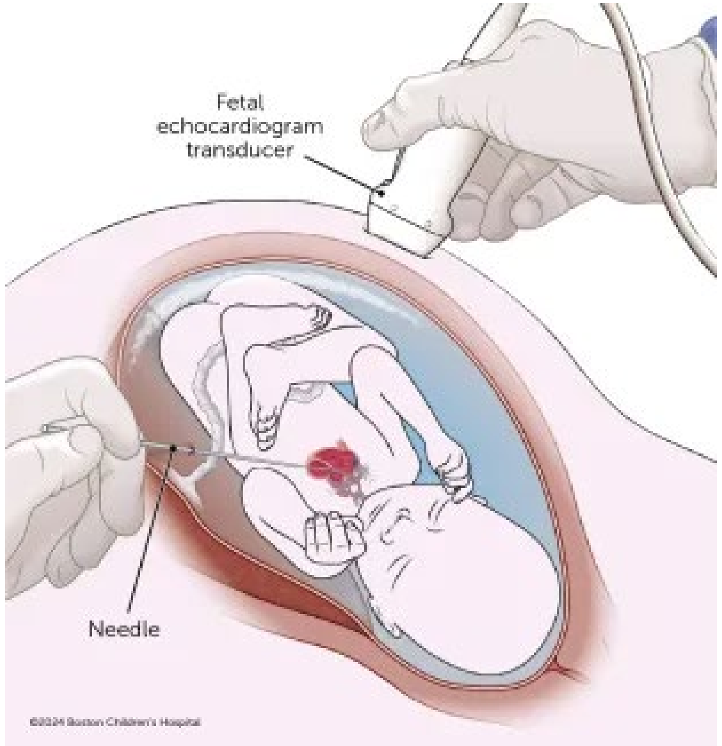
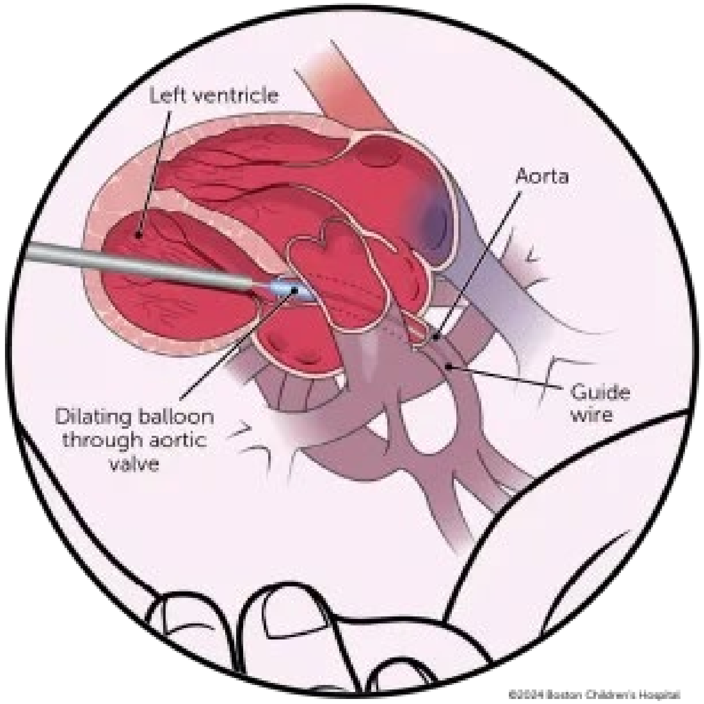


Fetal Cardiac Intervention

- Critical aortic stenosis
- Critical pulmonary stenosis
- Restrictive atrial septum
- Complete heart block
- Pericardial effusion





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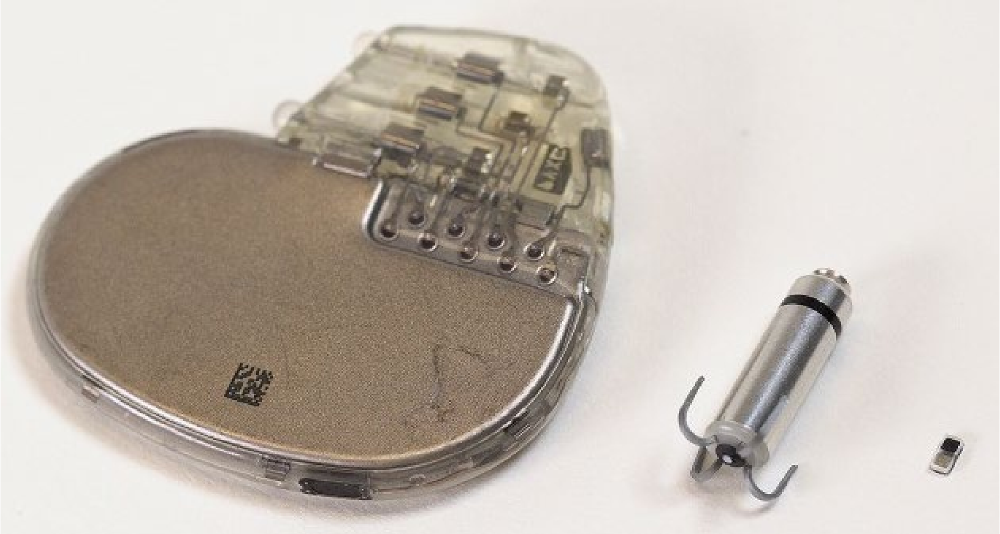
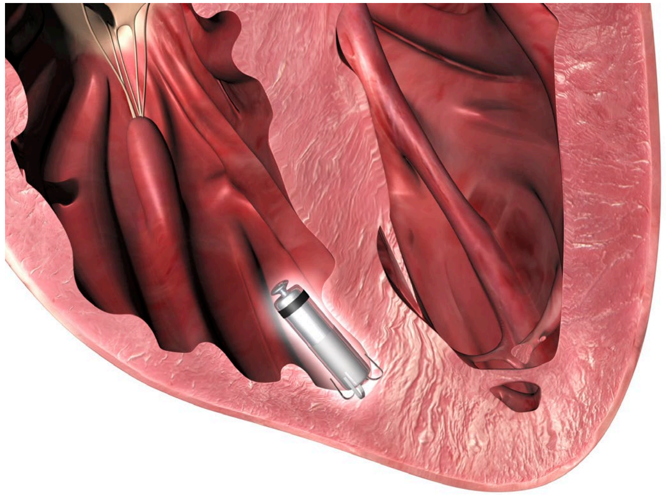
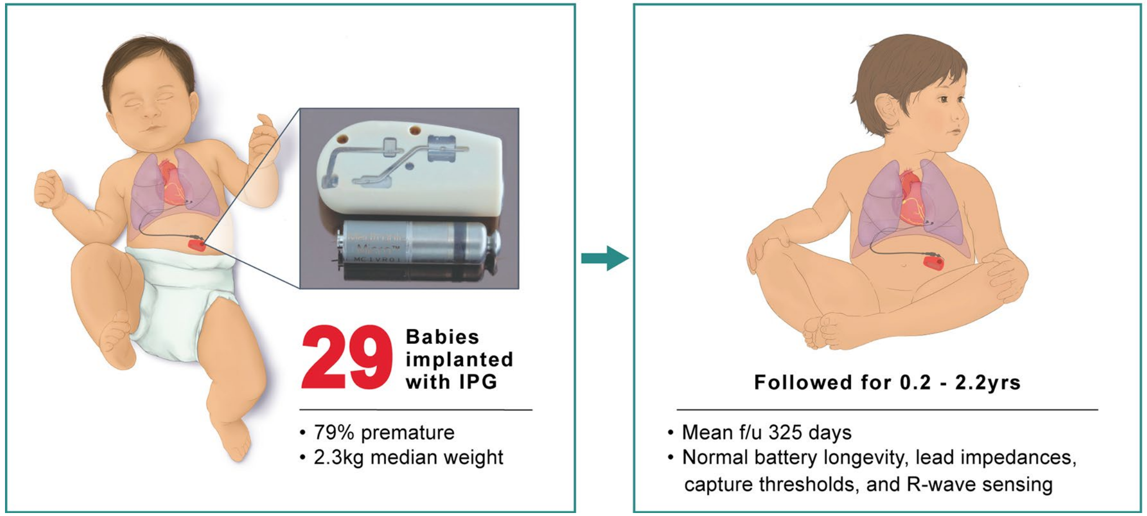
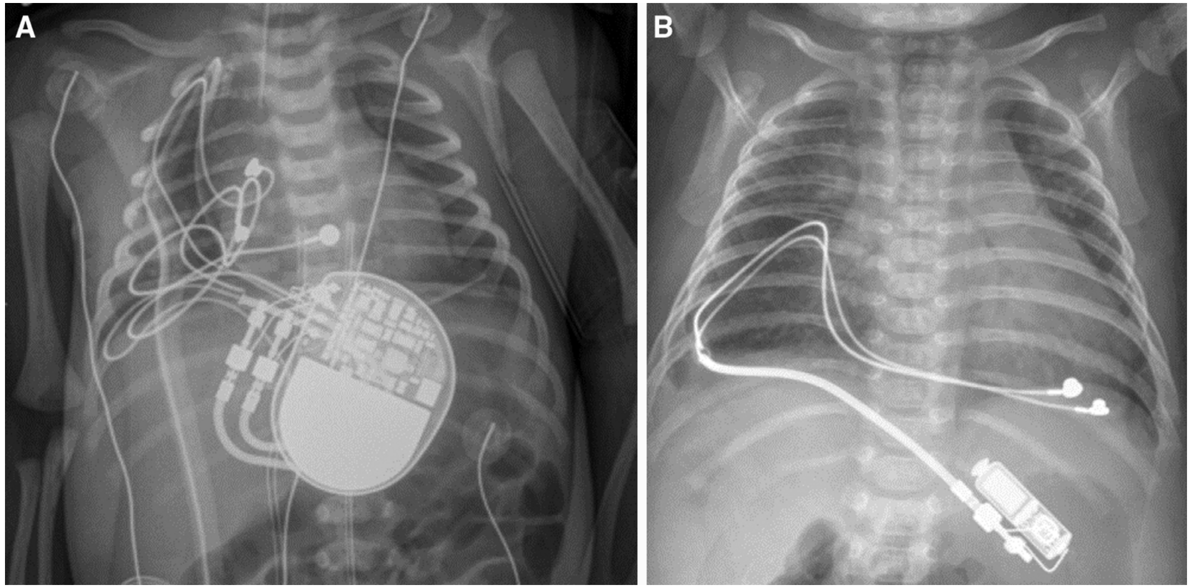
Pacemakers









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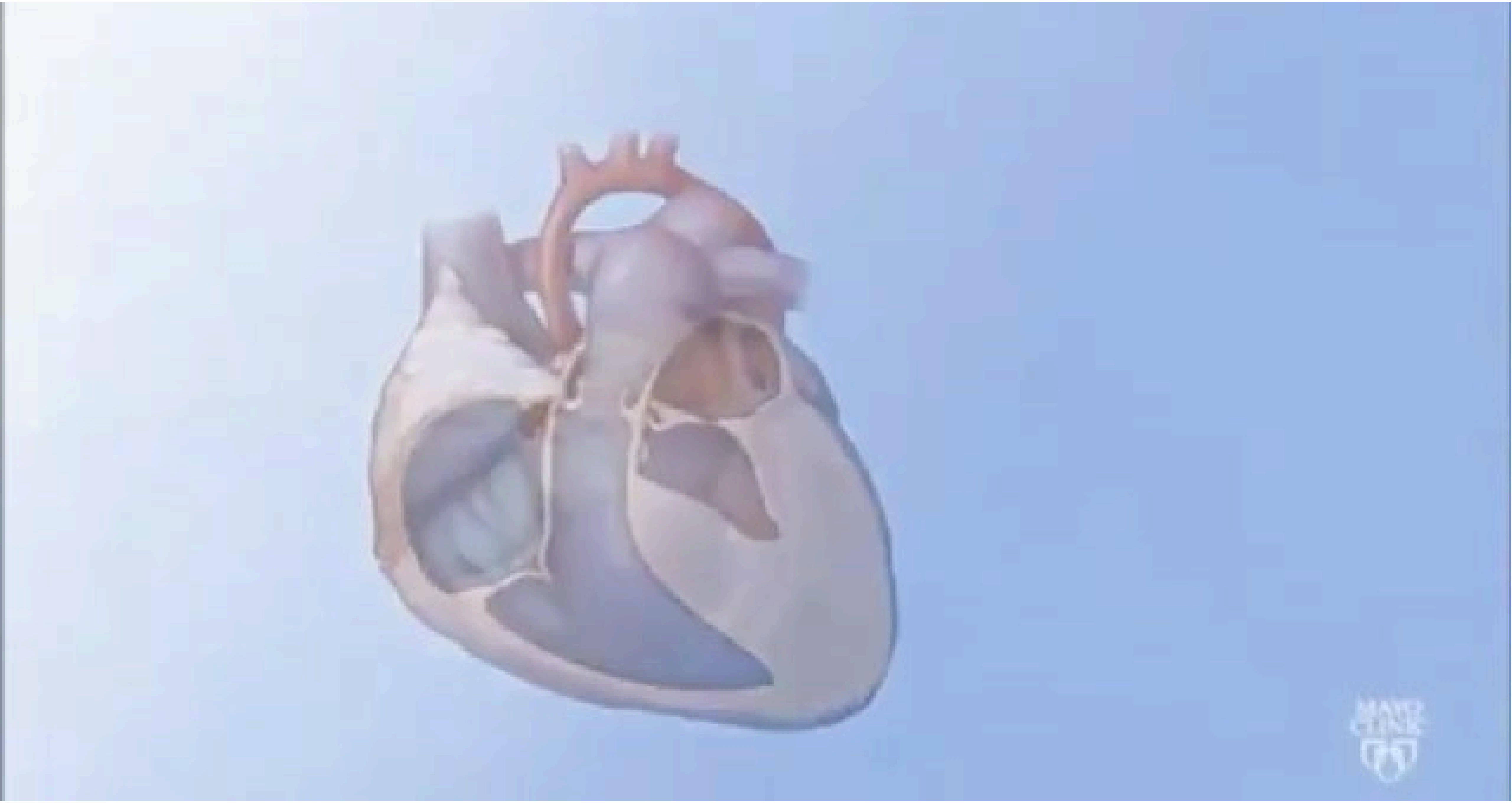
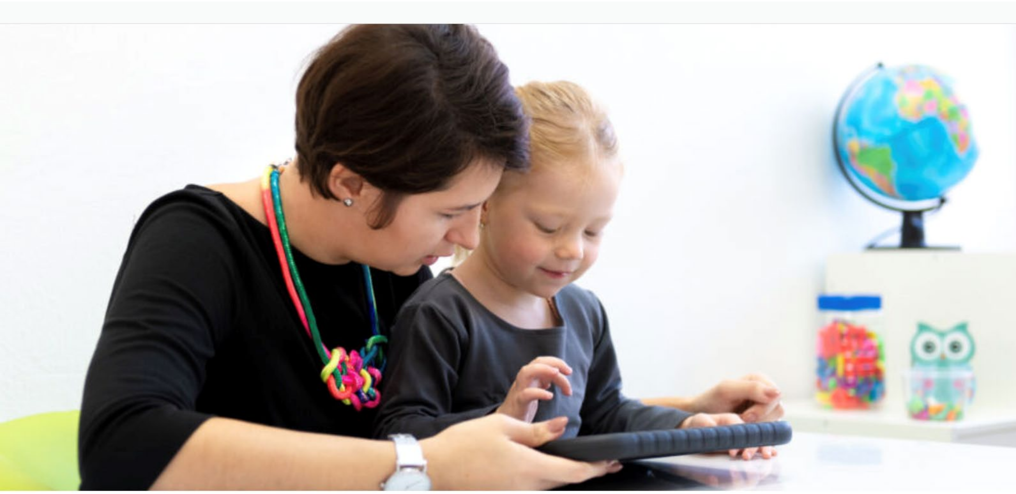
Genetic, Biomarker & Regenerative Advances

- Genetic diagnostics and targeted therapies for inherited cardiomyopathies: Muscular Dystrophy, Pompe's Disease
- Biomarkers
  - Heart failure and transplant
  - Neuro-developmental risk
- Stem/stem-derived cells for repair of complex congenital heart disease
  - Autologous cord blood
  - Mesenchymal-derived stem cells
  - Cardiac progenitor cells

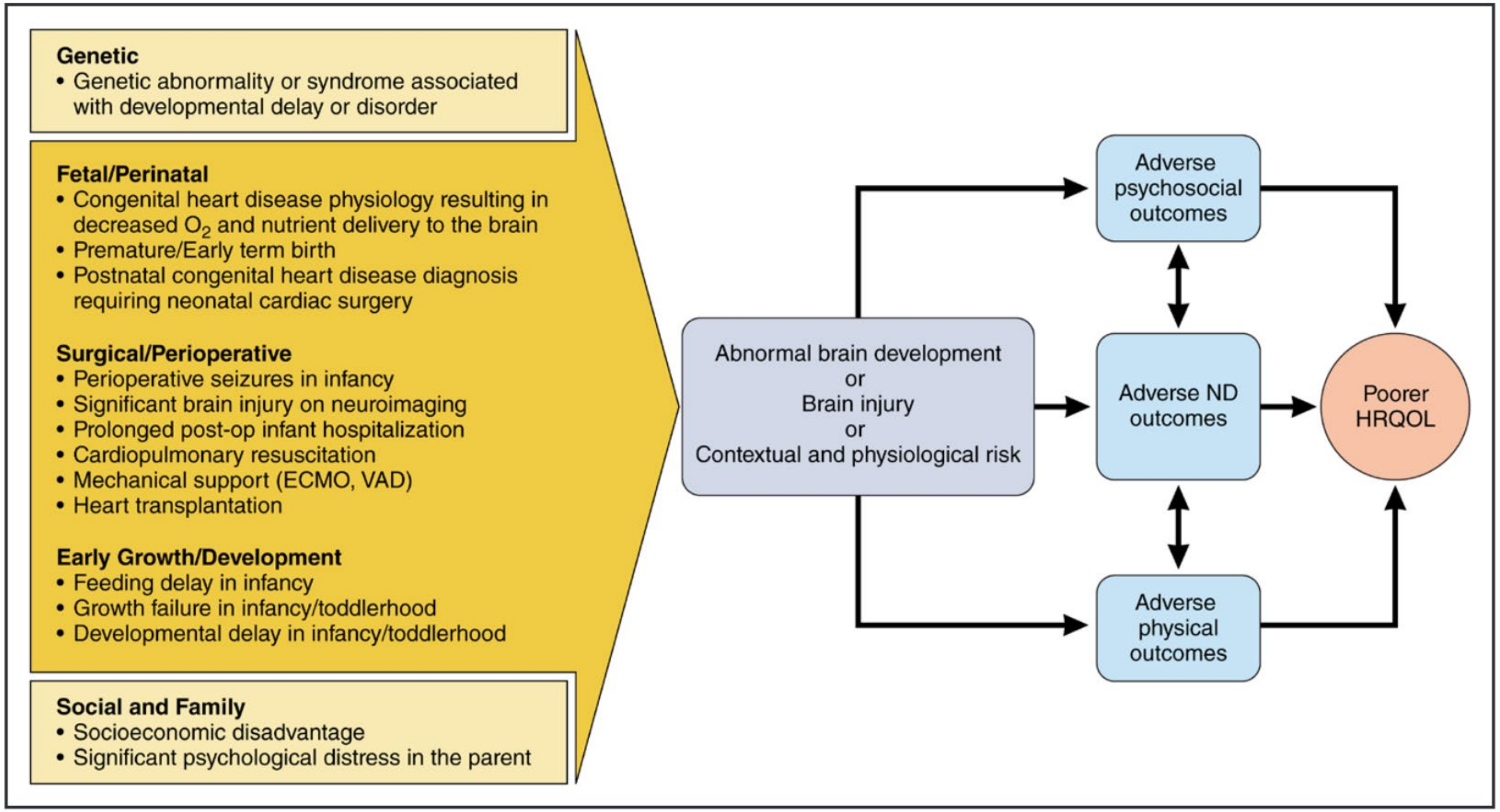


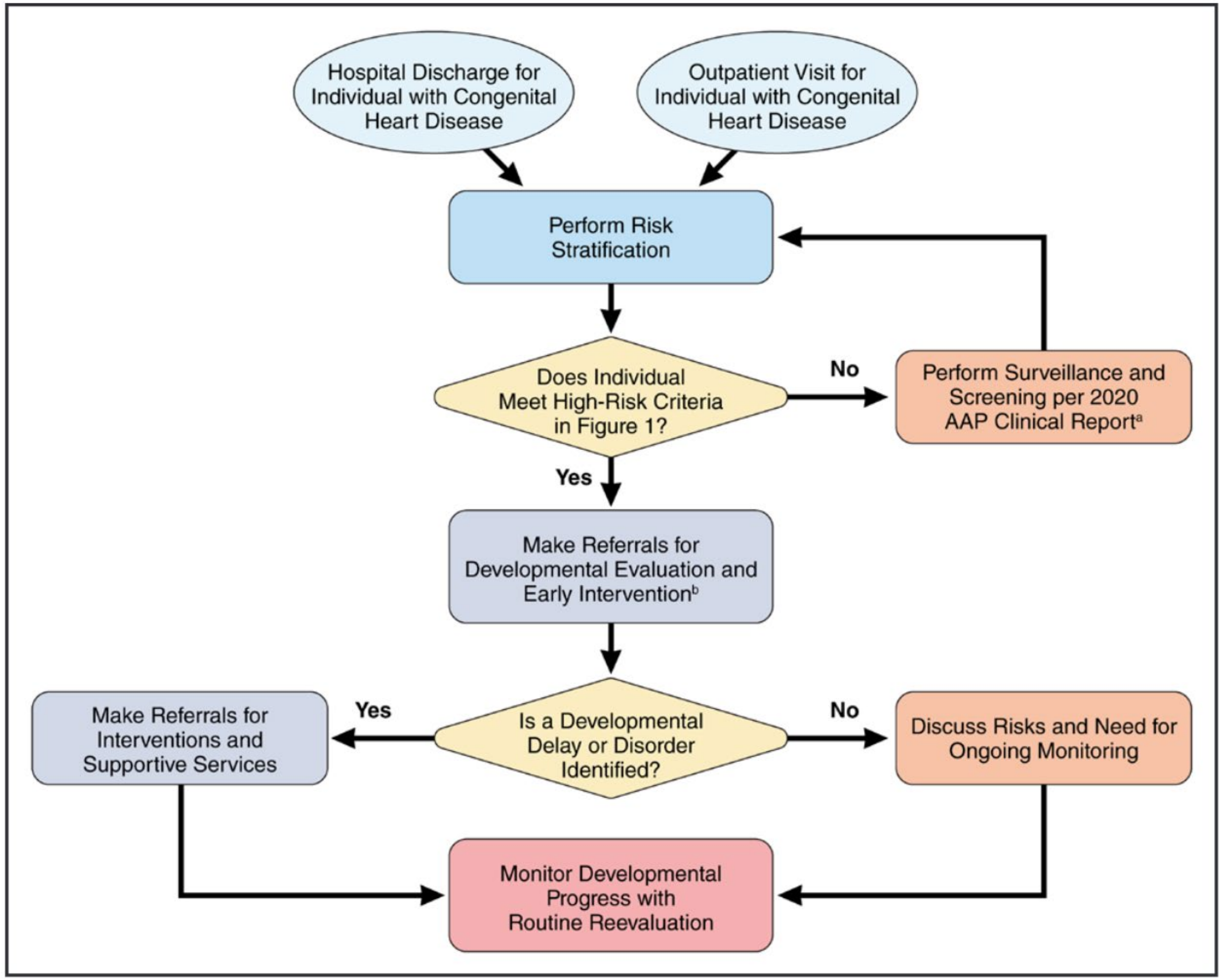
Neuro-Monitoring and Cerebral Protection

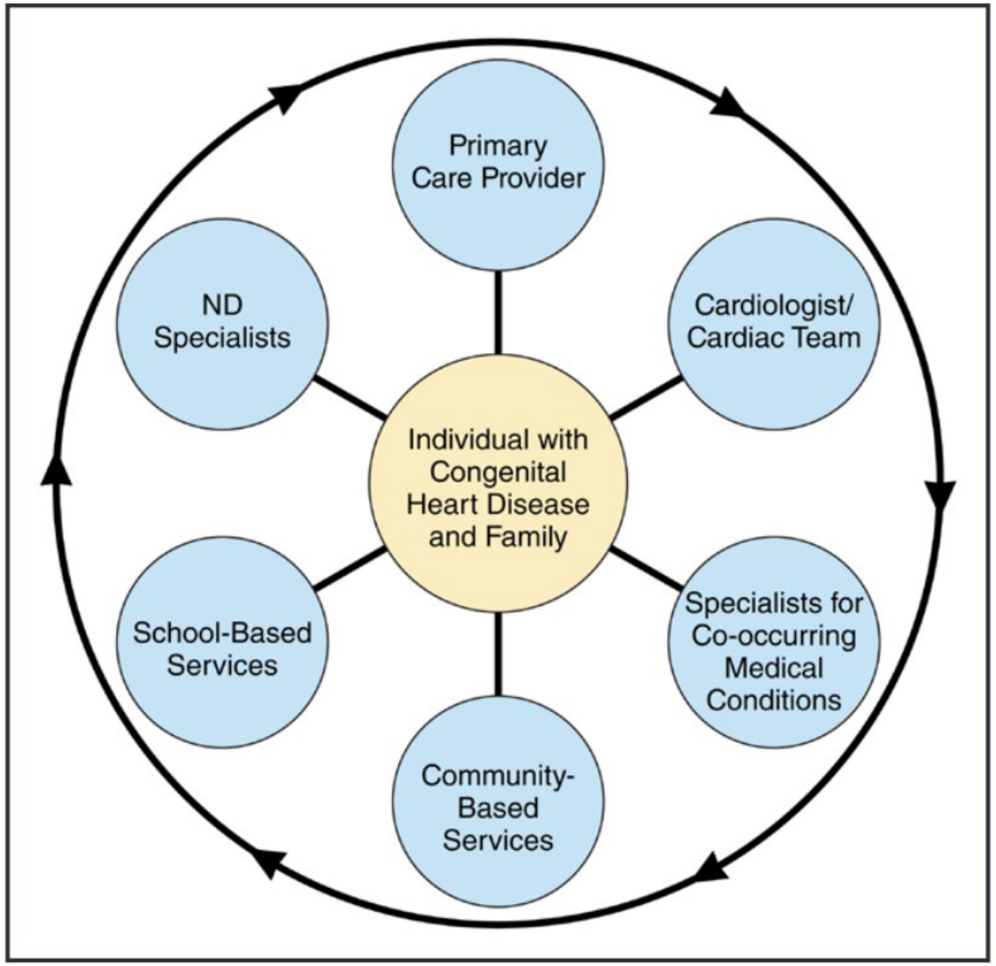


- Regional perfusion, near-infrared spectroscopy and continuous EEG for brain safety during CHD surgery
- Protocols to limit oxidative stress and improve long-term neurodevelopment
- Comprehensive multidisciplinary neurodevelopmental outcomes assessment and care

Neurodevelopmental Outcomes for Individuals With Congenital Heart Disease: Updates in Neuroprotection, Risk-Stratification, Evaluation, and Management: A Scientific Statement From the American Heart Association







Circulation 2024

Rehabilitation and Patient Engagement

Exergames in Cardiac Rehab Improved VO2 in Pediatric Heart Transplant Patients

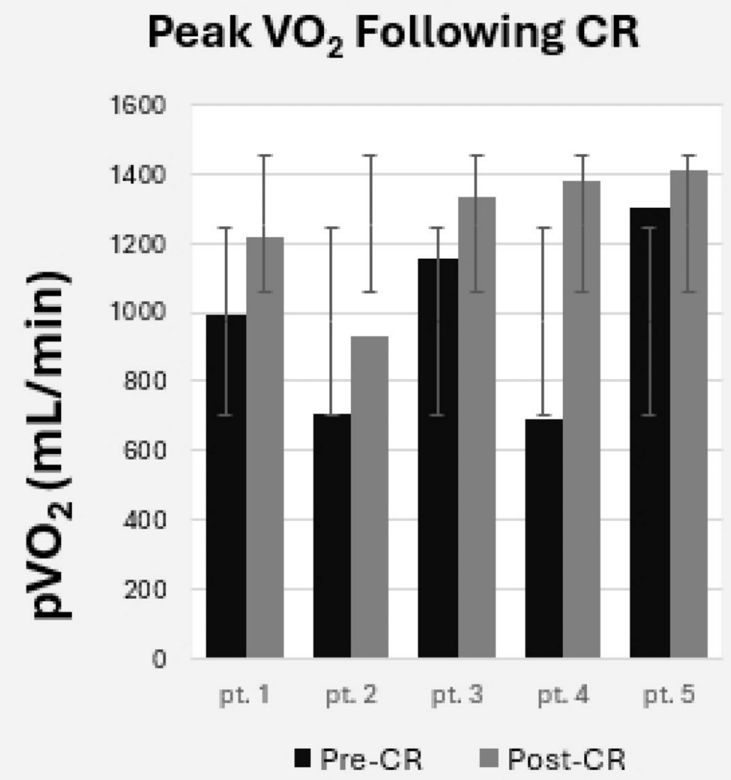


Fig.1. Peak VO2 from initial (pre-CR) to final (post-CR) CPET testing. VO2, oxygen uptake; CR, cardiac rehab; CPET, cardiopulmonary exercise test

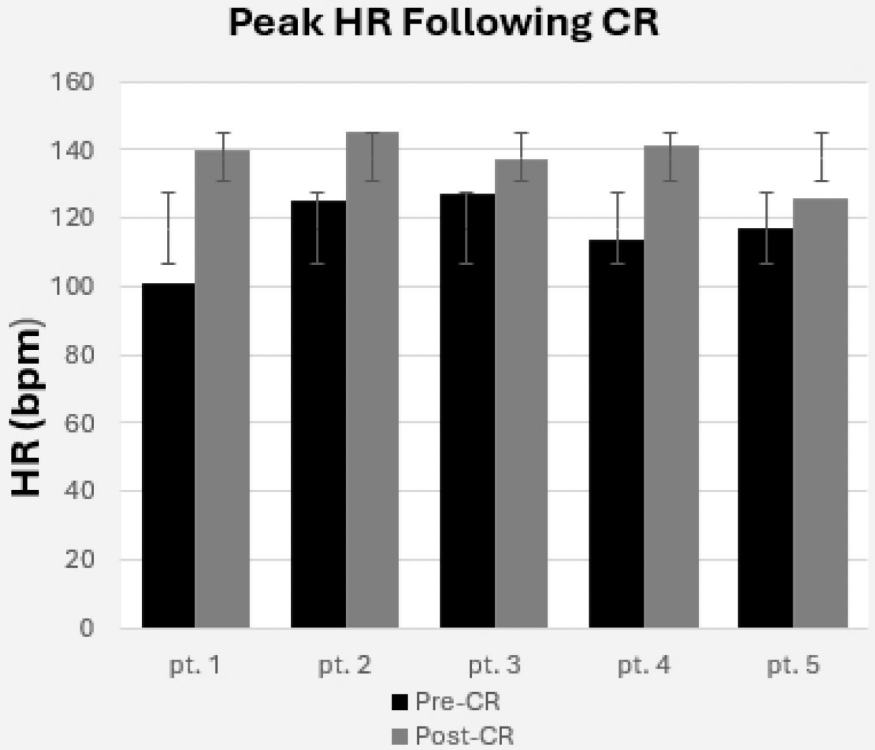


Fig.2. Peak HR from initial (pre-CR) to final (post-CR) CPET testing. HR, heart rate; CR, cardiac rehab; CPET, cardiopulmonary exercise test

Dysautonomia: Diagnosis

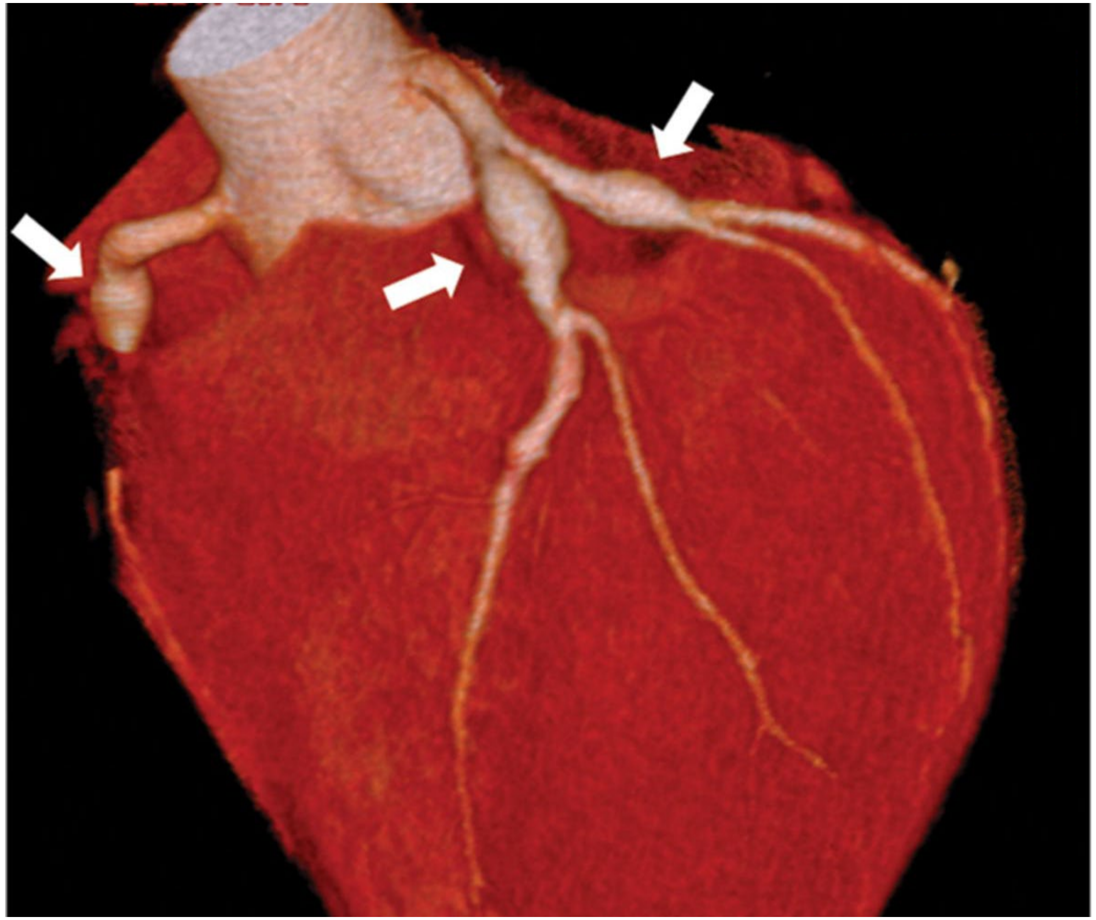
- Shift toward phenotype-based subtyping:
  - Postural Orthostatic Tachycardia Syndrome (POTS)
  - Neurocardiogenic syncope
  - Orthostatic hypotension
  - Hyperadrenergic states
- Genetic predisposition: novel variants identified in genes related to autonomic signaling (e.g., NET, SCN9A)
- Autoimmune dysautonomia: new links with post-viral syndromes (e.g., SARS-CoV-2, EBV)

Dysautonomia: Treatments

- Lifestyle/Behavioral
  - Expanded role of physical therapy: protocols adapted for younger patients
  - Biofeedback and Cognitive Behavioral Therapy for symptom control and coping
  - Dietary modifications: low-FODMAP, increased salt/fluid intake
  - Sleep hygiene and circadian rhythm stabilization
- Medication
  - Ivabradine: expanded use in pediatric POTS with fewer side effects
  - Low-dose beta blockers and fludrocortisone updates
  - New trials: droxidopa and midodrine in pediatric populations
  - Investigational agents: Mast Cell Activation Syndrome-targeted therapies, SSRIs for adrenergic surges
- Emerging therapies
  - Early-stage neuromodulation research (e.g., vagal nerve stimulation in teens)
  - Interest in immunomodulatory therapy for autoimmune subtypes

AHA SCIENTIFIC STATEMENTS

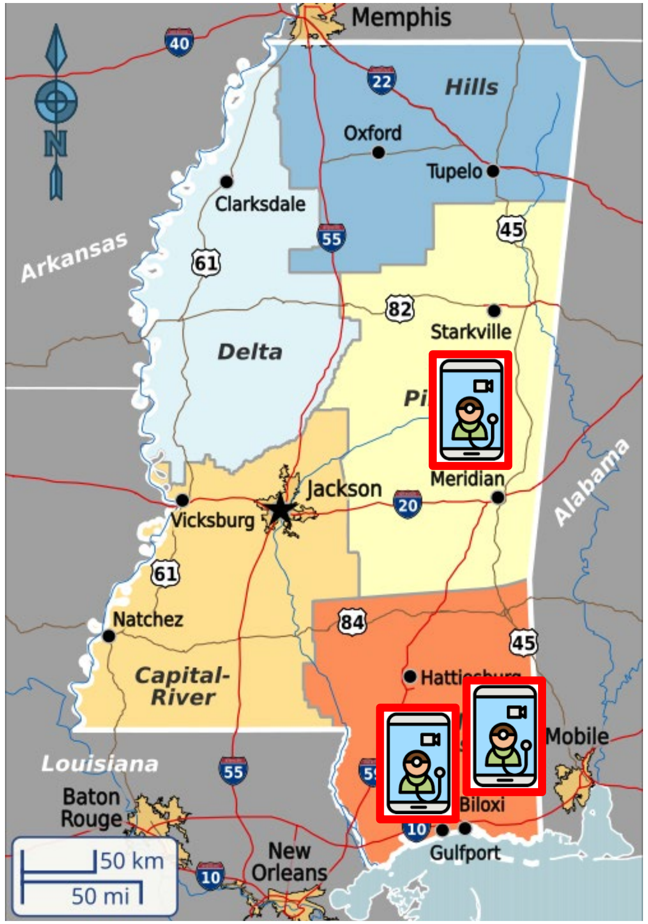
Update on Diagnosis and Management of Kawasaki Disease: A Scientific Statement From the American Heart Association



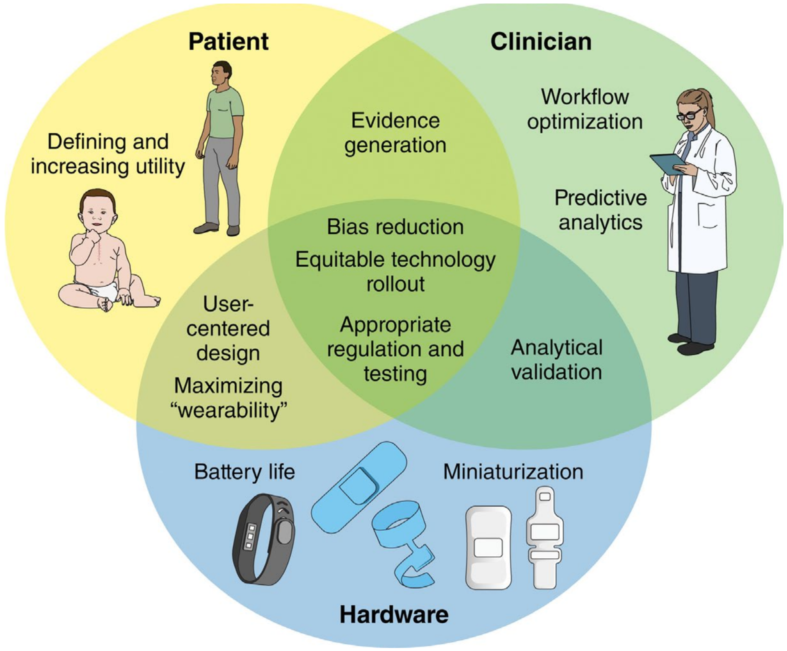
- Safety and dosing for several anti-inflammatory therapies
- New anticoagulation medication
- Myocardial infarction management,
- Transition of health care
- Future directions in research

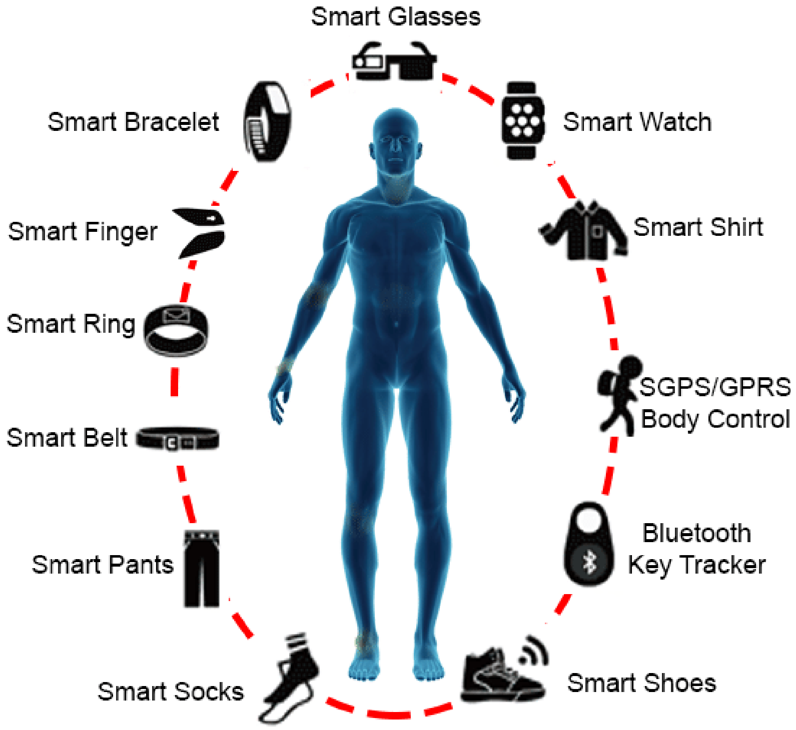
Telemedicine

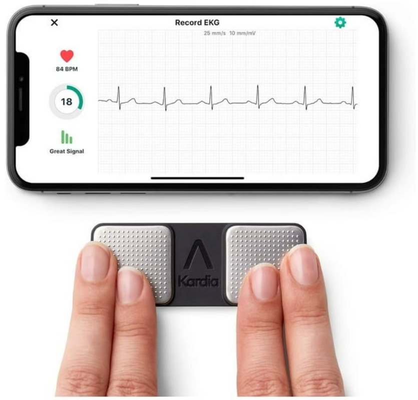
- Newborn echocardiography
- Interstage home monitoring
- Intensive care
- Rhythm assessment
- Outpatient followup
- Preventive cardiology

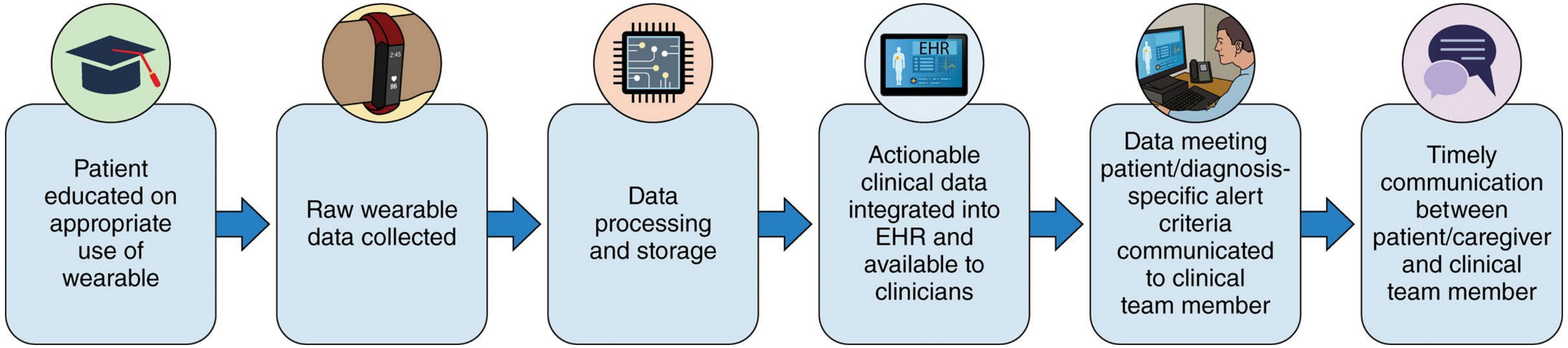


Advancing Wearable Biosensors for Congenital Heart Disease: Patient and Clinician Perspectives: A Science Advisory From the American Heart Association









New Orleans heart doctor has a passion for global health, providing resources to Uganda

By MARGARET DELANEY | Staff writer Apr 24, 2025 4 min to read

T-P | nola.com

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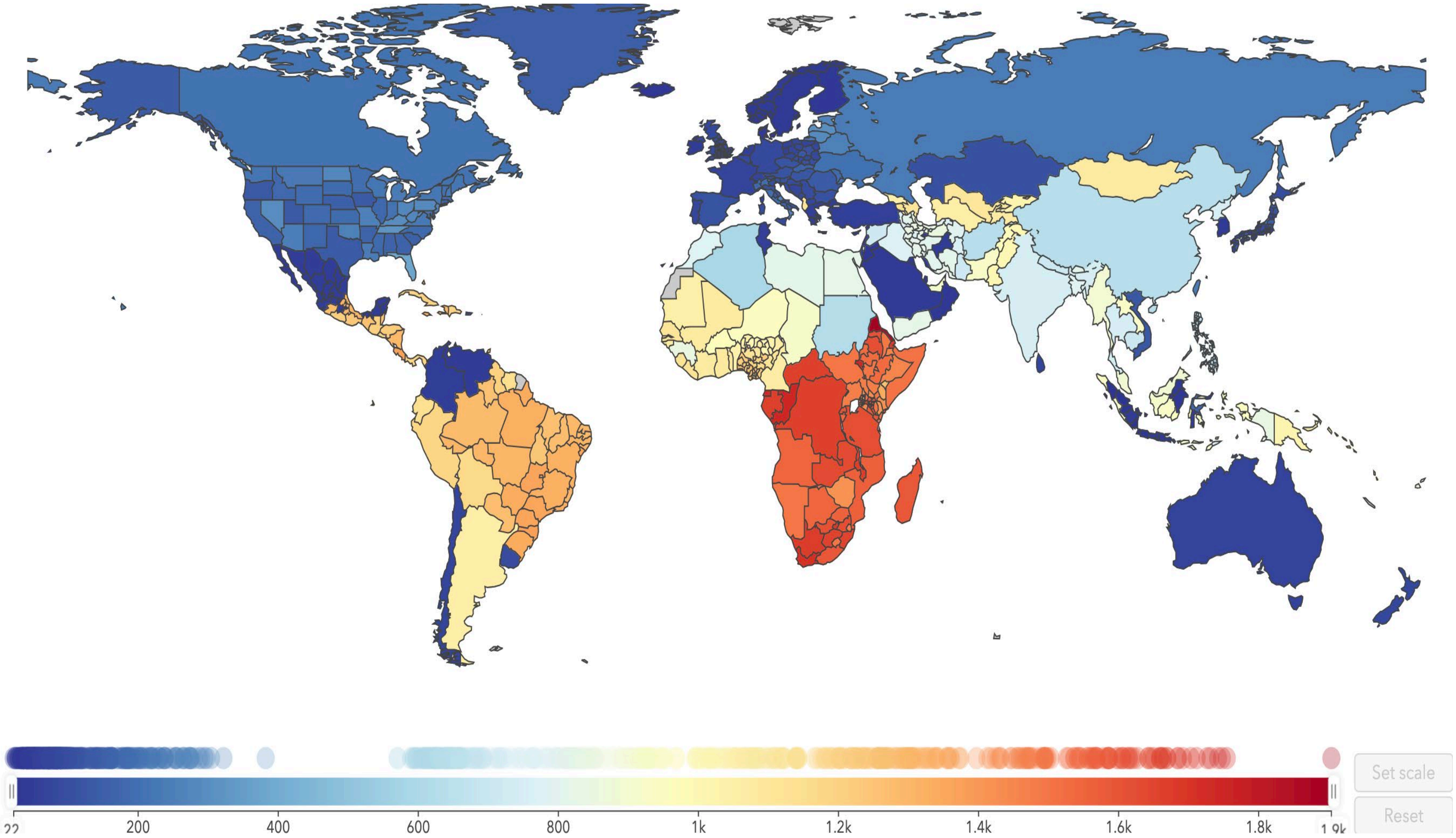
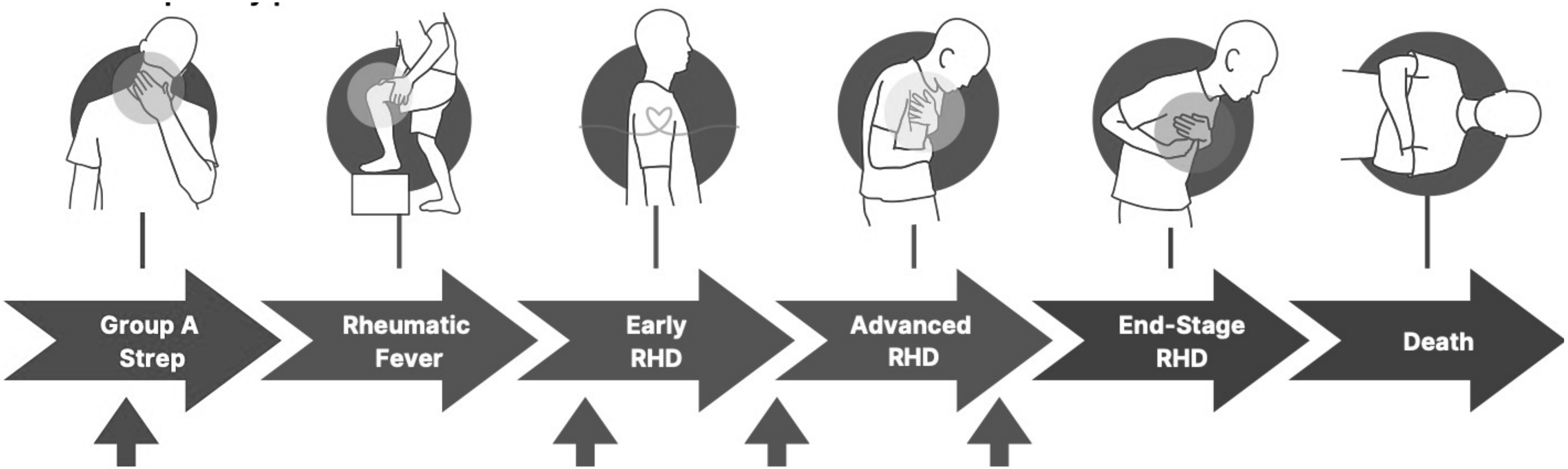
Rheumatic Heart Disease

More than 50 million people are living with rheumatic heart disease (RHD) with nearly 400,000 fatalities each year



Rheumatic Fever/Rheumatic Heart Disease Opportunities for Intervention

Primordial Prevention
Housing/Hygiene

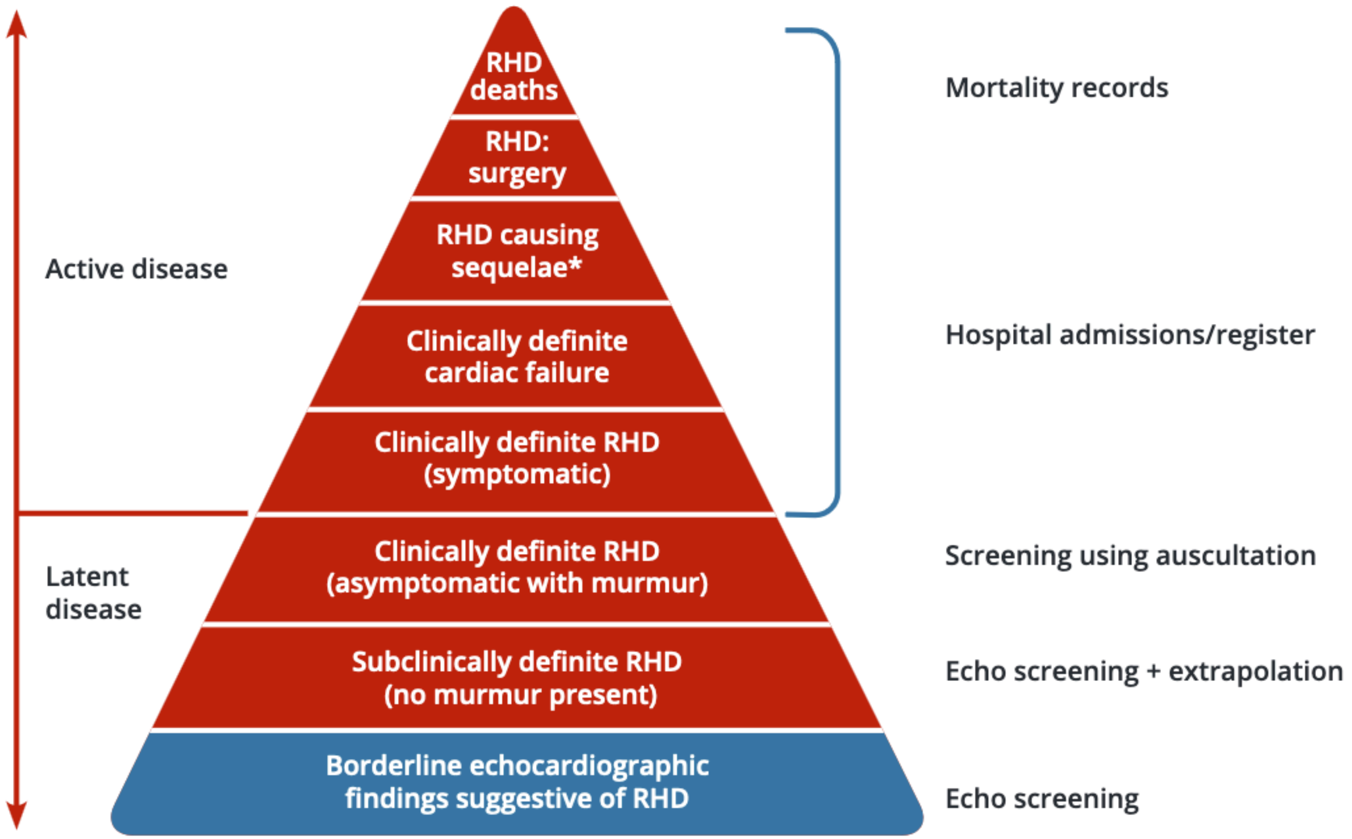


Primary Prevention
Sore throat treatment
Control of skin infections
VACCINE

Secondary Prevention
Penicillin Prophylaxis

Tertiary Intervention
Medication/Cath/Surgery

Figure 3.2. Model for assessing the burden of RHD *(Adapted from Zühlke and Steer 2013)*



*AF, stroke, infective endocarditis

2020 Australia ARF/RHD Guidelines

nature reviews cardiology
https://doi.org/10.1038/s41569-023-00940-9

Evidence-based guidelines

Check for updates

2023 World Heart Federation guidelines for the echocardiographic diagnosis of rheumatic heart disease

Joselyn Rwebembera[1,38], James Marangou[2,3,4,38], Julius Chacha Mwita[5], Ana Olga Mocumbi[6], Cleonice Mota[7,8], Emmy Okello[1], Bruno Nascimento[9,10], Lene Thorup[11], Andrea Beaton[12,13], Joseph Kado[14,15], Alexander Kaethner[2,16], Raman Krishna Kumar[17], John Lawrenson[18,19], Eloi Marijon[20], Mariana Mirabel[21], Maria Carmo Pereira Nunes[9,10], Daniel Piñeiro[22], Fausto Pinto[23], Kate Ralston[24], Craig Sable[25], Amy Sanyahumbi[26], Anita Saxena[27], Karen Sliwa[28], Andrew Steer[29,30,31], Satupaitea Viali[32], Gavin Wheaton[33], Nigel Wilson[34], Liesl Zühlke[35,36] & Bo Reményi[2,16,37]

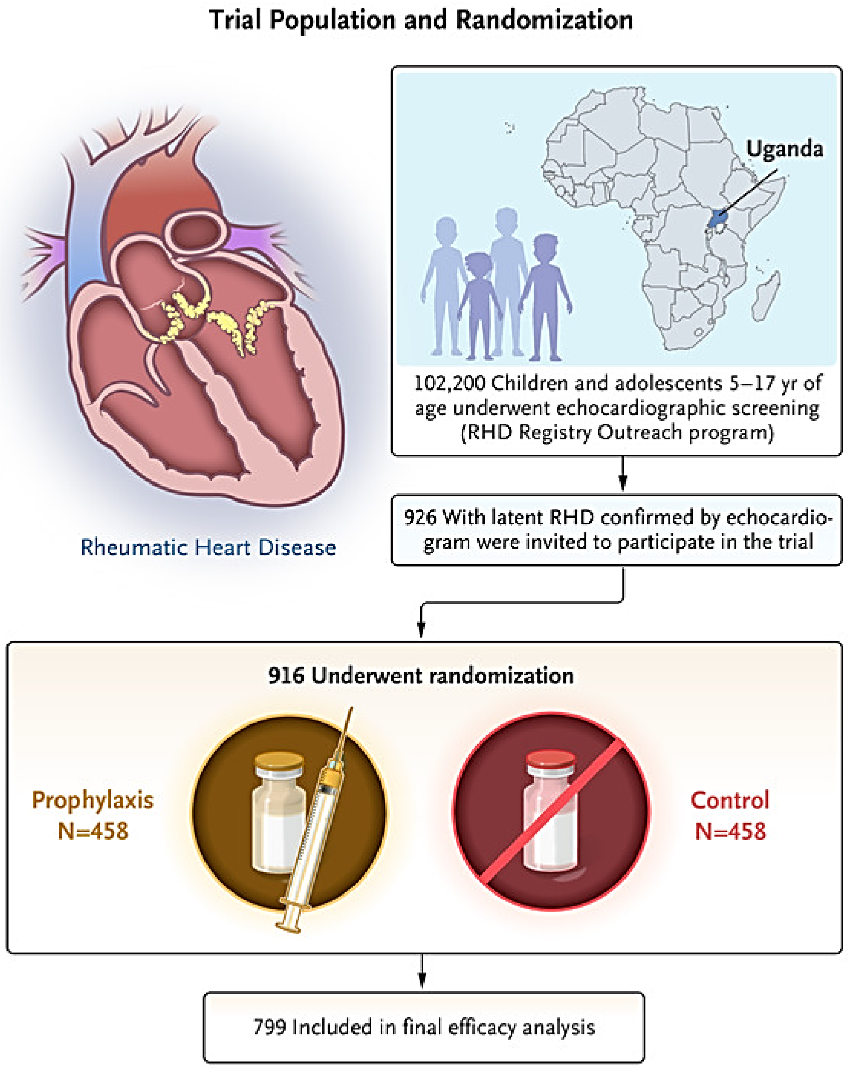
Echo Screening Studies in LMIC:

2 – 3% Prevalence of Latent RHD

BEST CHILDREN'S HOSPITALS U.S.News RANKED IN 3 SPECIALTIES 2024-2025

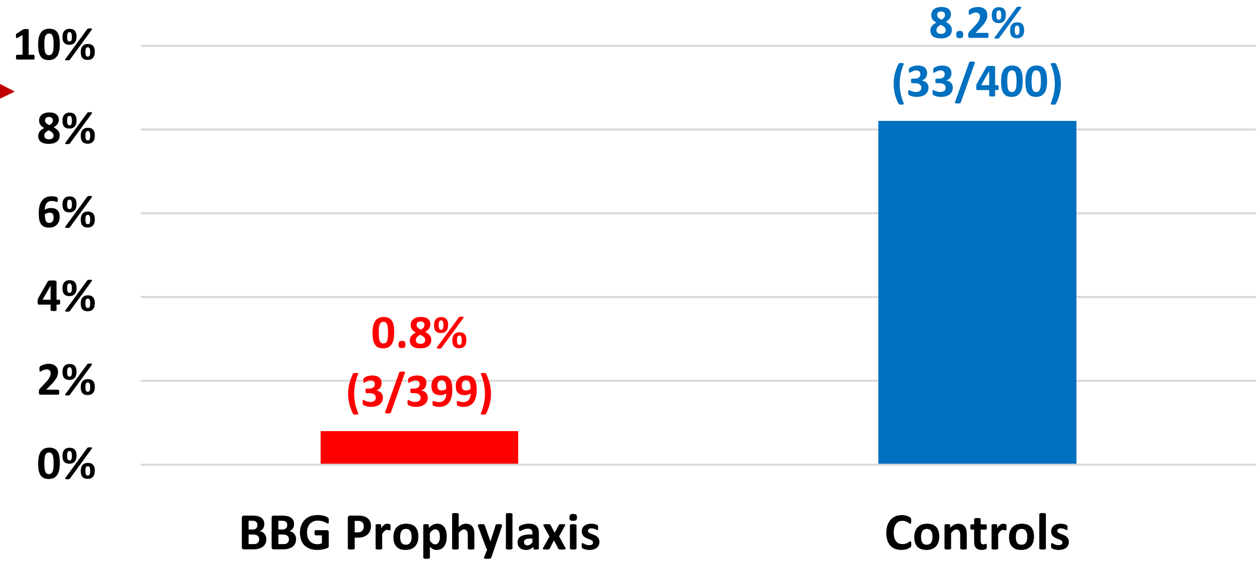
NEW ENGLAND JOURNAL OF MEDICINE 2022

GOAL
GwokO Adunu pa Lutino
PROTECT THE HEART OF A CHILD



Preventive antibiotic treatment resulted in **reduced risk for children** living with asymptomatic rheumatic heart disease

Echo Progression of Latent RHD at 2 Years



P < 0.0001; NNT 13

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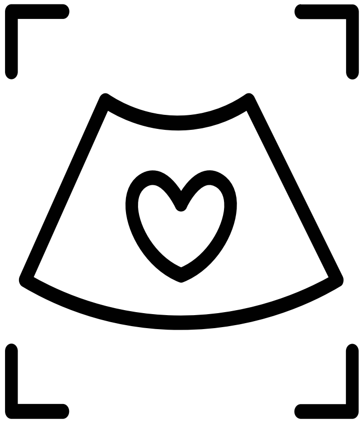
Technology to Find and Treat RHD

1 Find more people who need prophylaxis



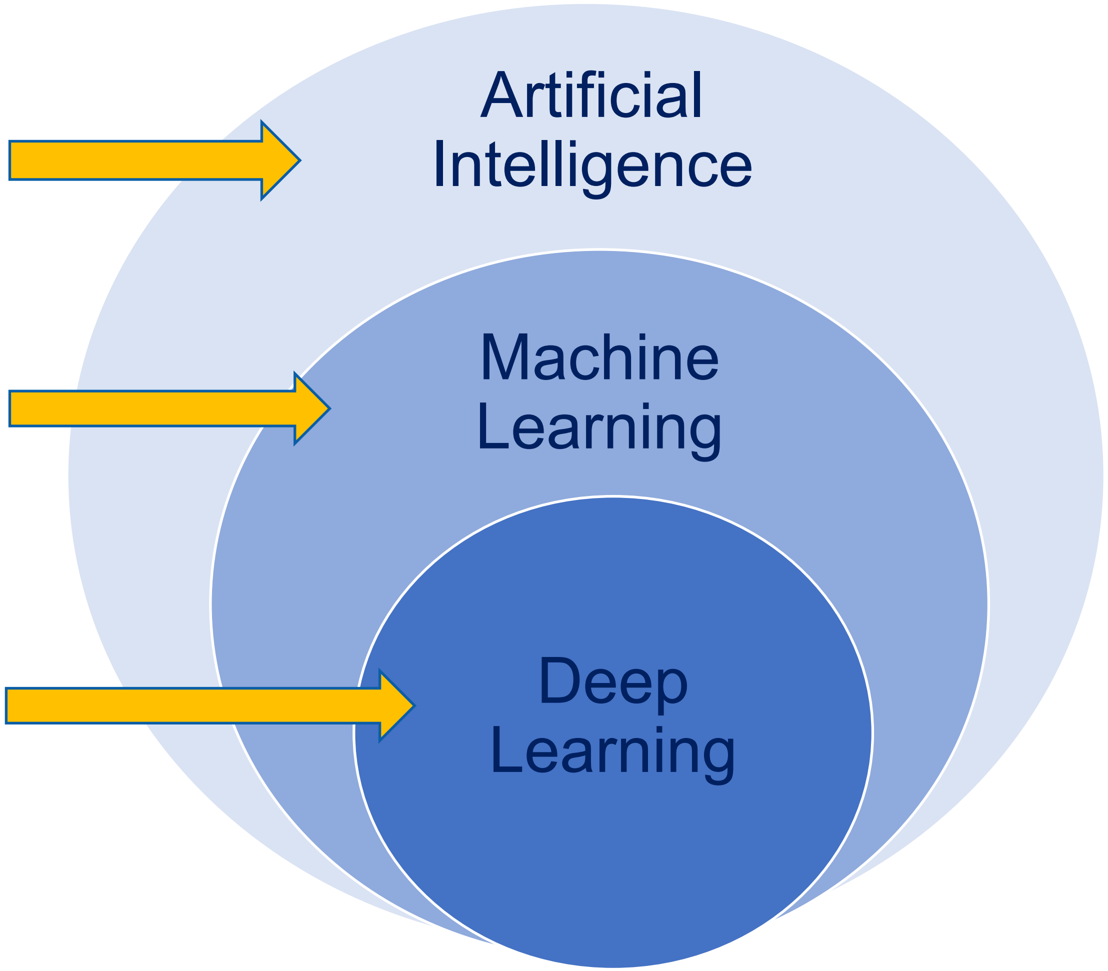
AI-empowered echocardiography

2 Keep more people on prophylaxis

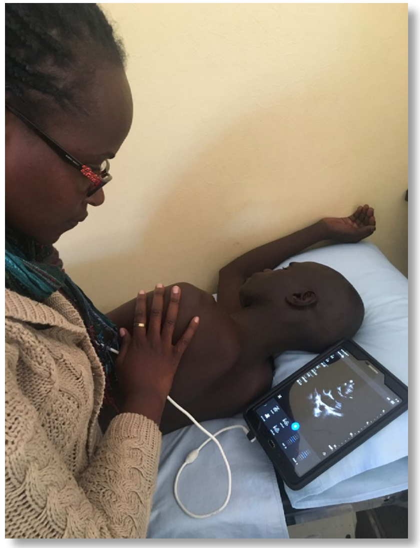
Mobile Health Case Management

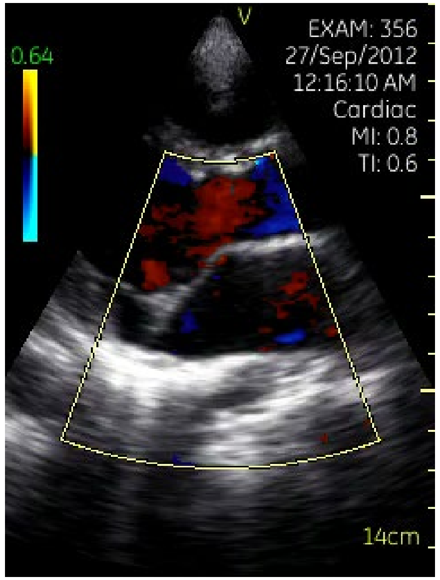
Artificial Intelligence

- Empowers machines to mimic human intelligence
- Uses statistical techniques to enable a machine to learn with experience
- Mimics the complex neural networks of the human brain, allowing the machine to adapt and learn using vast amounts of data



AI Results for Rheumatic Heart Disease





Validation Datasets	Accuracy	Sensitivity	Specificity
Standard Images	0.92 + 0.27	0.94 + 0.24	0.90 + 0.31
Handheld Images	0.82 + 0.03	0.82 + 0.05	0.82 + 0.04

Brown….Sable, JAHA 2024, manuscript in process

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Academics
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BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT RANKED IN 3 SPECIALTIES 2024-2025

XAVIER UNIVERSITY OF LOUISIANA

XAVIER Ochsner College of Medicine

Ochsner Health | XAVIER UNIVERSITY of LOUISIANA

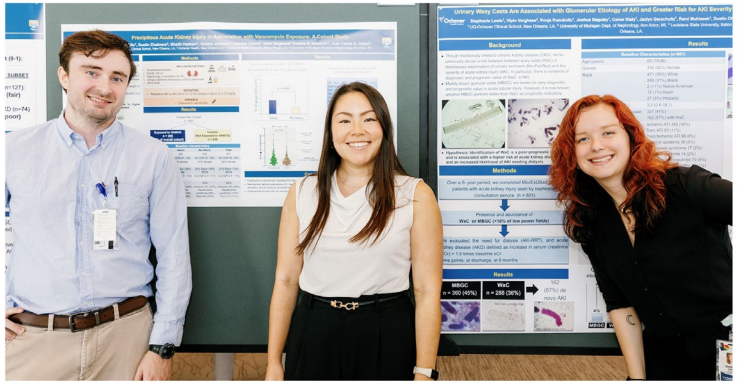
INSTITUTE FOR HEALTH EQUITY AND RESEARCH

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

Ochsner Clinical School

Highlights from the 2025 Ochsner Research Week

RESEARCH ANNOUNCEMENTS



Ochsner Health

Current Residents - Pediatrics Residency Program

GRADUATE MEDICAL EDUCATION › PROGRAMS › PEDIATRICS RESIDENCY PROGRAM


Maria Aman, MBBS


Sara Gross, MD, MPH


Shivam Gulati, MBBS


Khola Khan, MBBS


Elyssa Mejia, MD


Etaluka Mungu, MD


Jagriti Paul, MBBS


Sherif Shoela, MBChB, MHSA


Hala Taha, MBChB


Sneha Tummala, MD

BEST CHILDREN'S HOSPITALS
U.S.News & WORLD REPORT
RANKED IN 3 SPECIALTIES 2024-2025

Coming in Q1 2028

Ochsner Children's Hospital

- ✓ 5 stories 100% dedicated to kids and families
- ✓ Approx. 150 beds
- ✓ Consolidated procedural floor with dedicated pediatric pre-op and recovery, ORs, endoscopy, dental procedures, sleep lab
- ✓ Large critical care floor with ICU, CCU, stepdown, Cath lab.
- ✓ Specialized surgical NICU and delivery suite
- ✓ Brand new pediatric ER with direct exterior access
- ✓ Consolidated pediatric imaging center for in and outpatient imaging

THANK YOU!