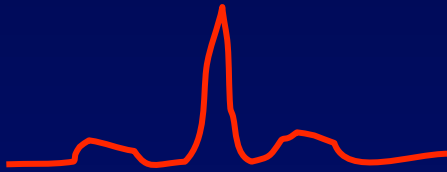


Adult Congenital Heart Disease

Change The Outcome

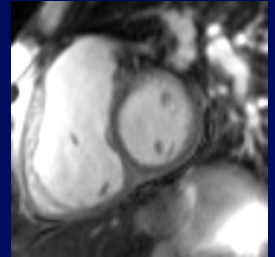


Curt J Daniels, MD, FACC

Associate Professor, Internal Medicine and Pediatrics

Director, **COACH** Program **C**olumbus **O**hio **A**dult **C**ongenital **H**eart Disease and
Pulmonary Hypertension Programs

Division of Cardiology, The Ohio State University & The Heart Center at Nationwide
Children's Hospital



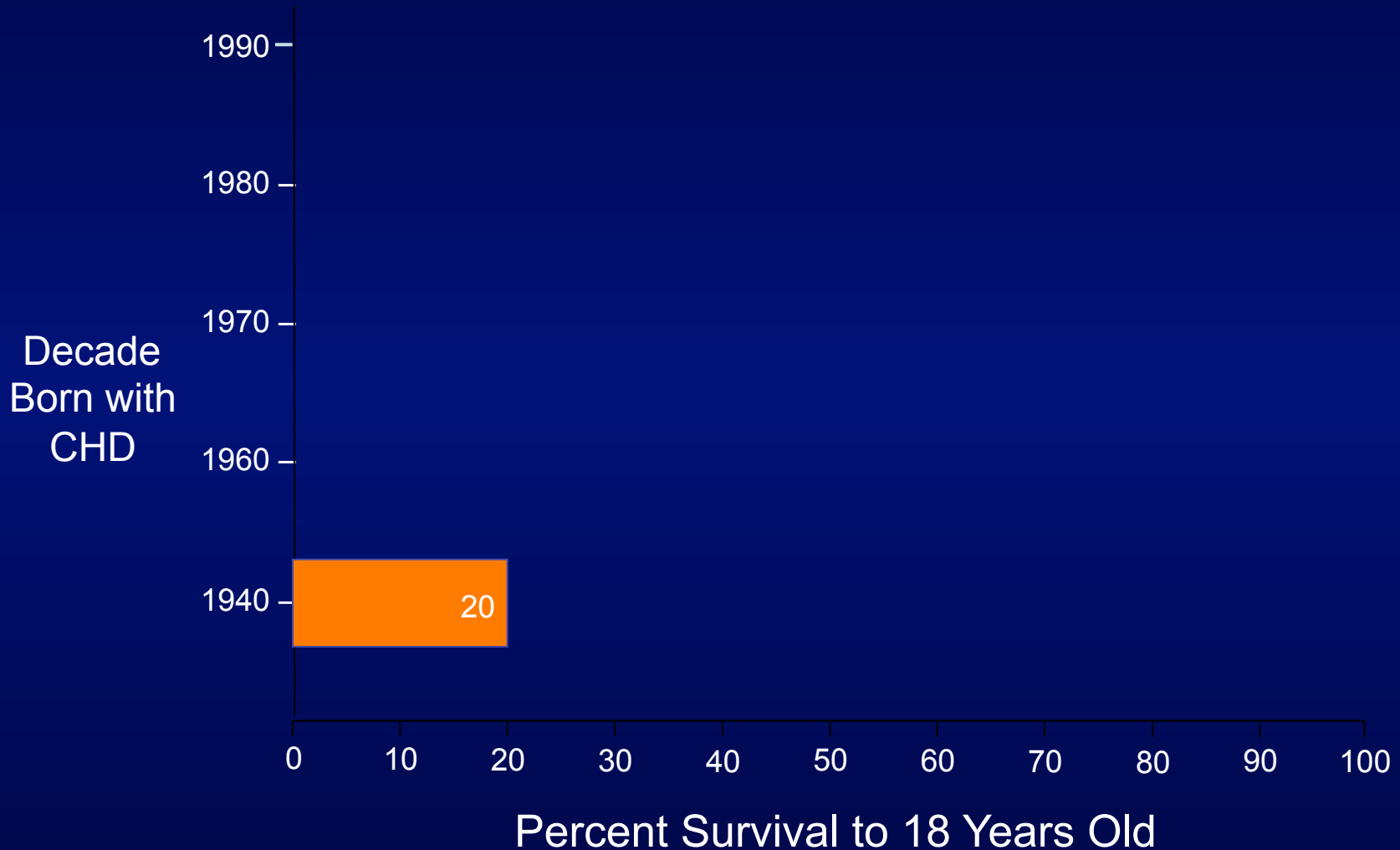
POPULATION

ACHD - Population

- 40,000 infants born with CHD/ year.
- THE most common birth defect
- What is successful outcome?
 - Surviving initial surgical repair
 - Surviving to 1 year of age
 - Normal childhood
 - Normal adolescence

Surviving to Adulthood

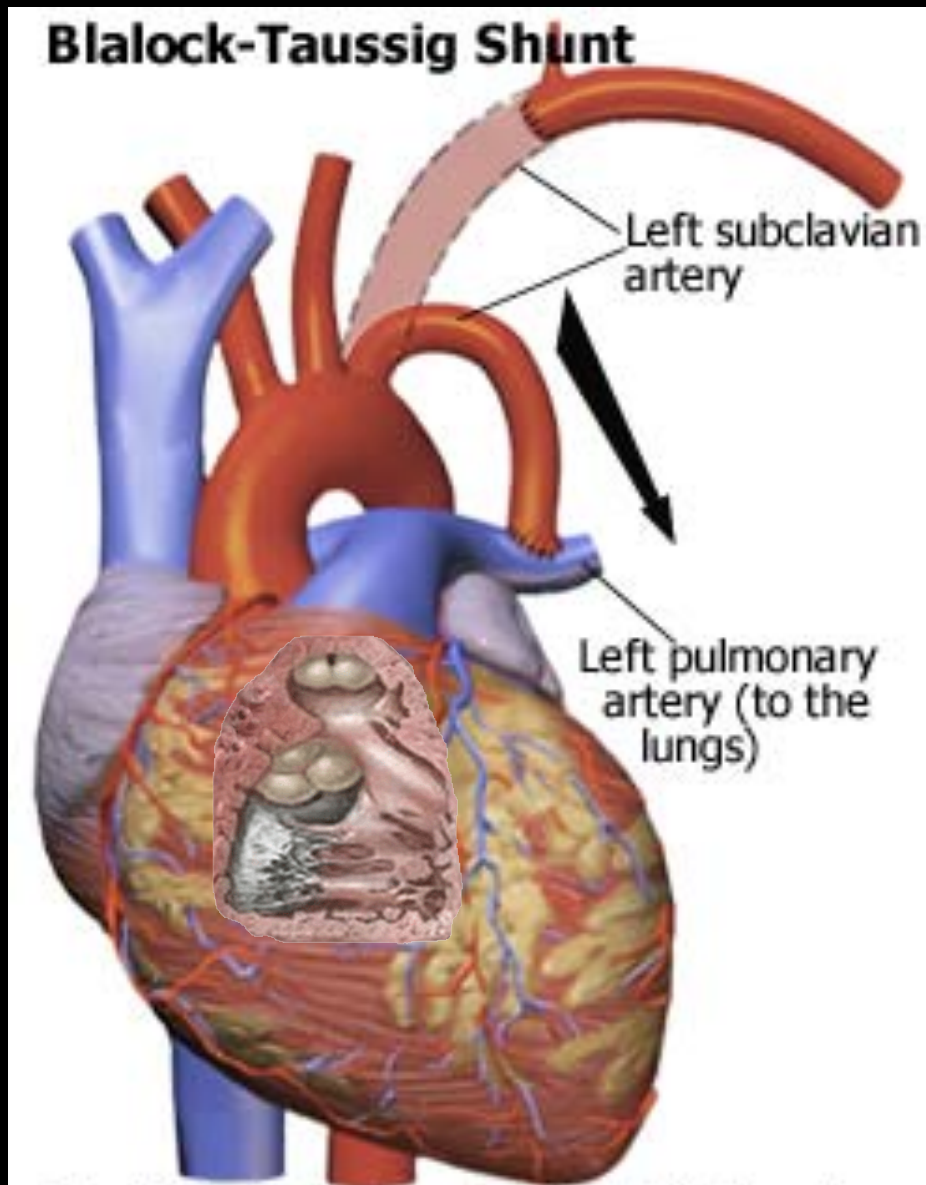
Survival to 18 yrs of age with CHD



Warnes CA, et al. *J Am Coll Cardiol.* 2001;37(5):1170-1175.

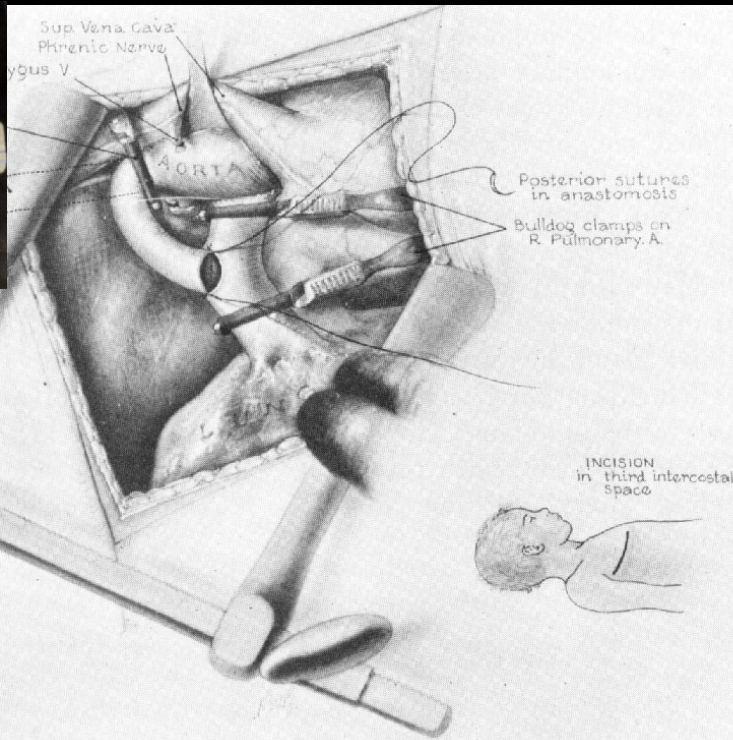
Moons P et al. *Circulation* 2010.122:2264-2272

TOF – Blalock Taussig Shunt

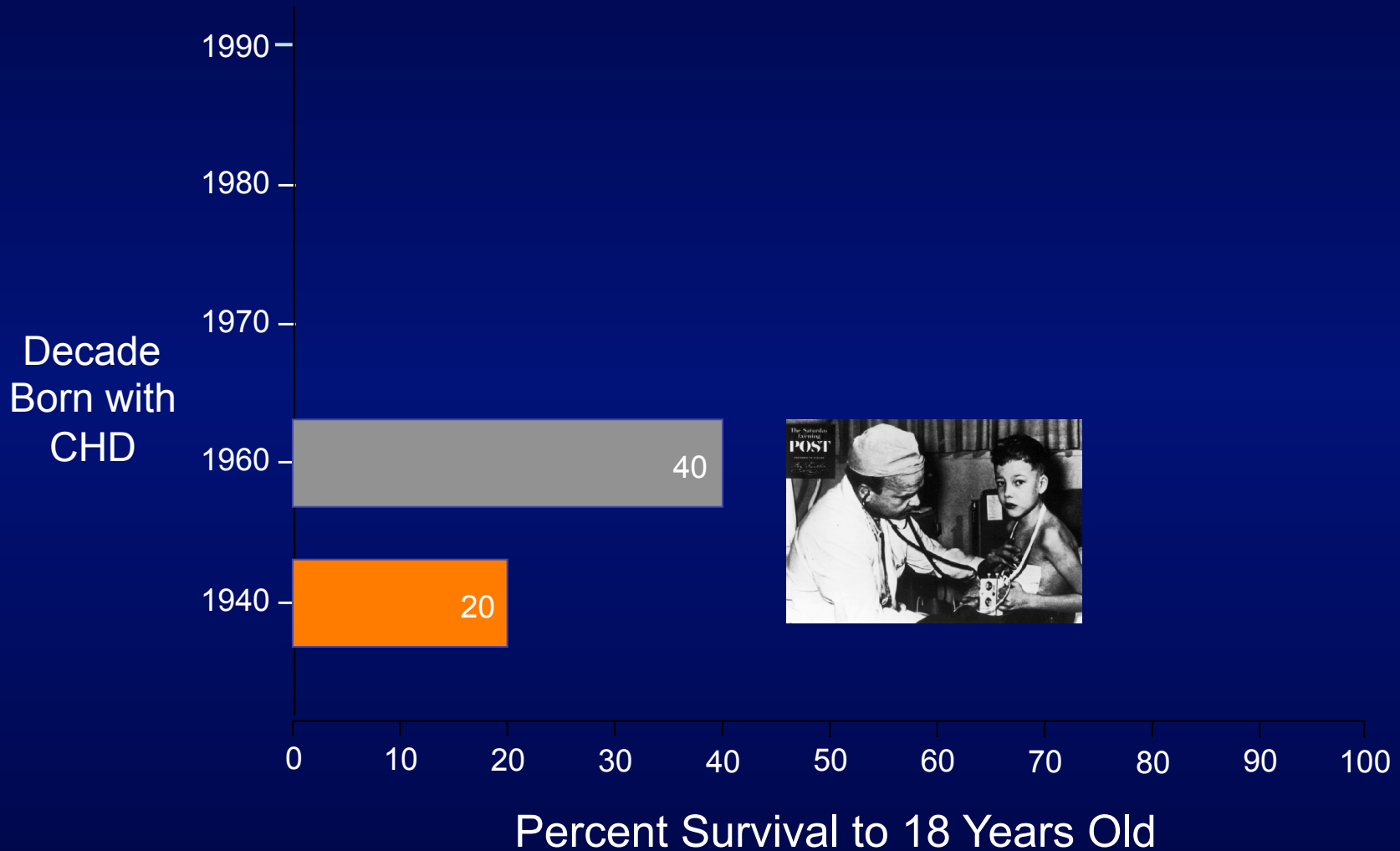


TOF – Blalock Taussig Shunt

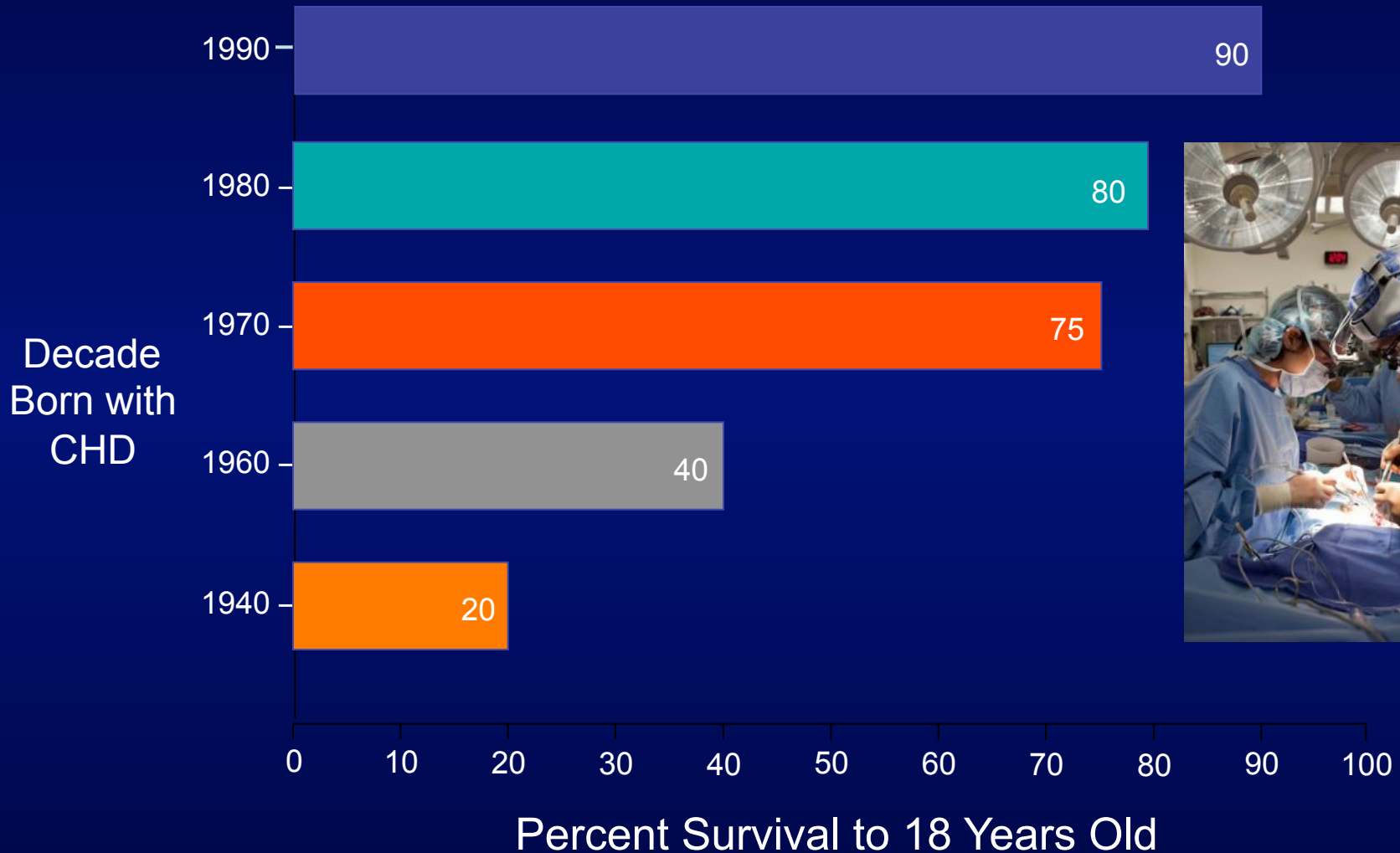
"On November 29, 1944, students and professors crowded into the double-deck observation gallery above the eighth-floor operating room in the Halsted Clinic. Because there was a danger of losing the child Eileen before the operation began, Dr. Merel Harmel decided not to use a strong anaesthetic and put her slowly to sleep with a diluted mixture of ether and oxygen.



Survival to 18 yrs of age with CHD



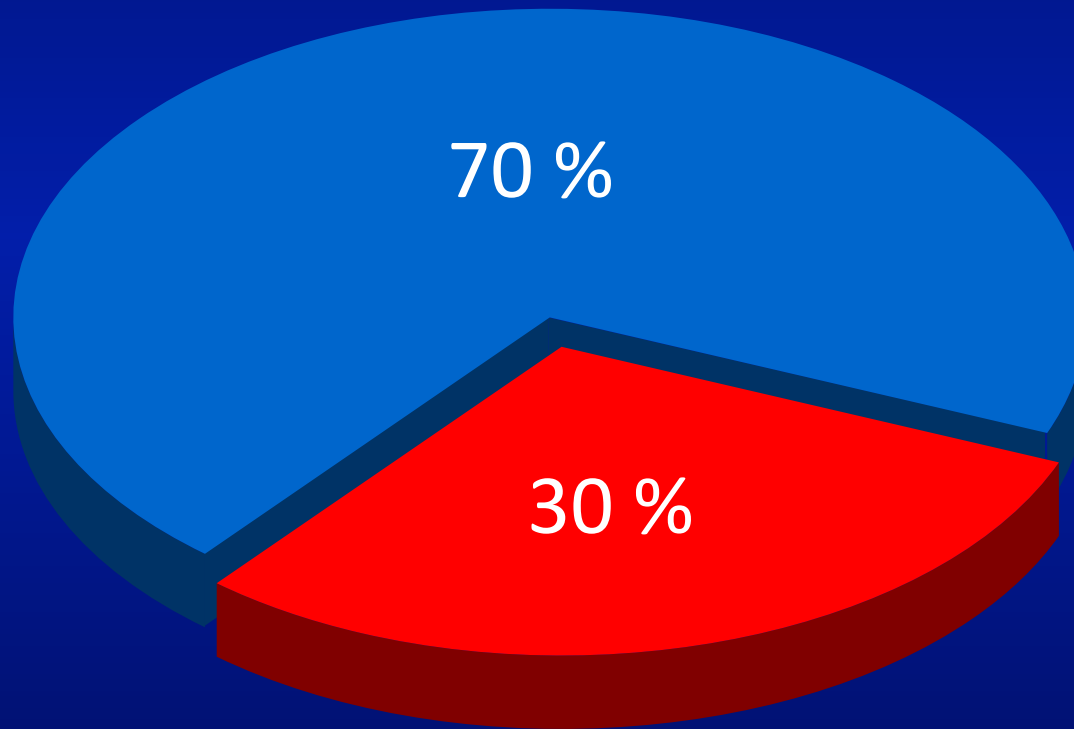
Survival to 18 yrs of age with CHD



ACHD - Population

**Surviving to
Adulthood is Now
Expected**

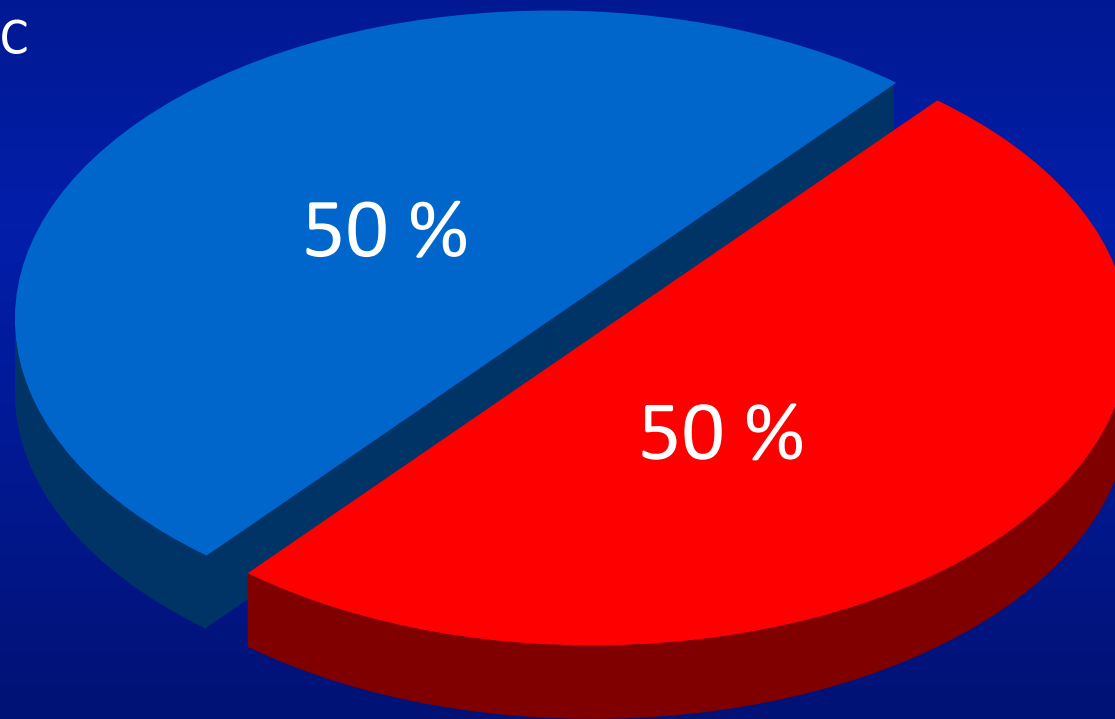
Congenital Heart Disease Population



1965

Congenital Heart Disease Population

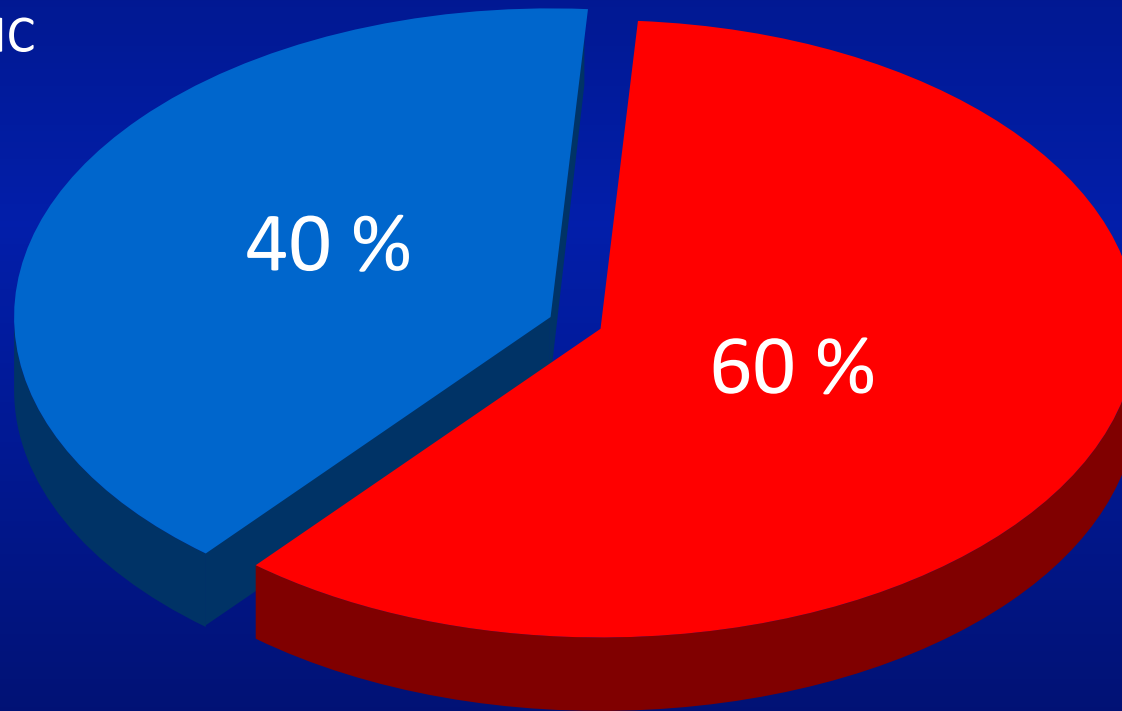
 PEDIATRIC
 ADULT



2000

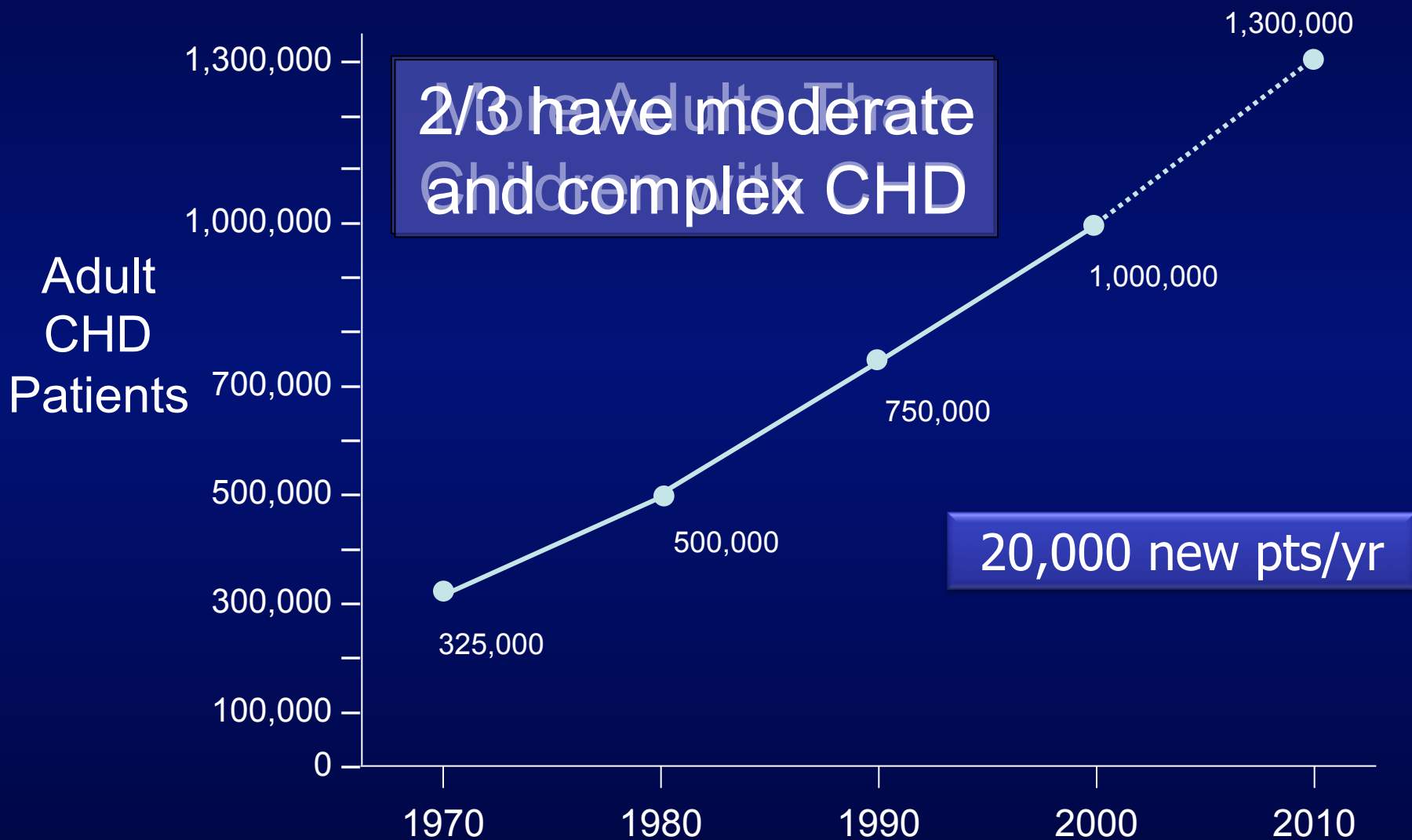
Congenital Heart Disease Population

 PEDIATRIC
 ADULT



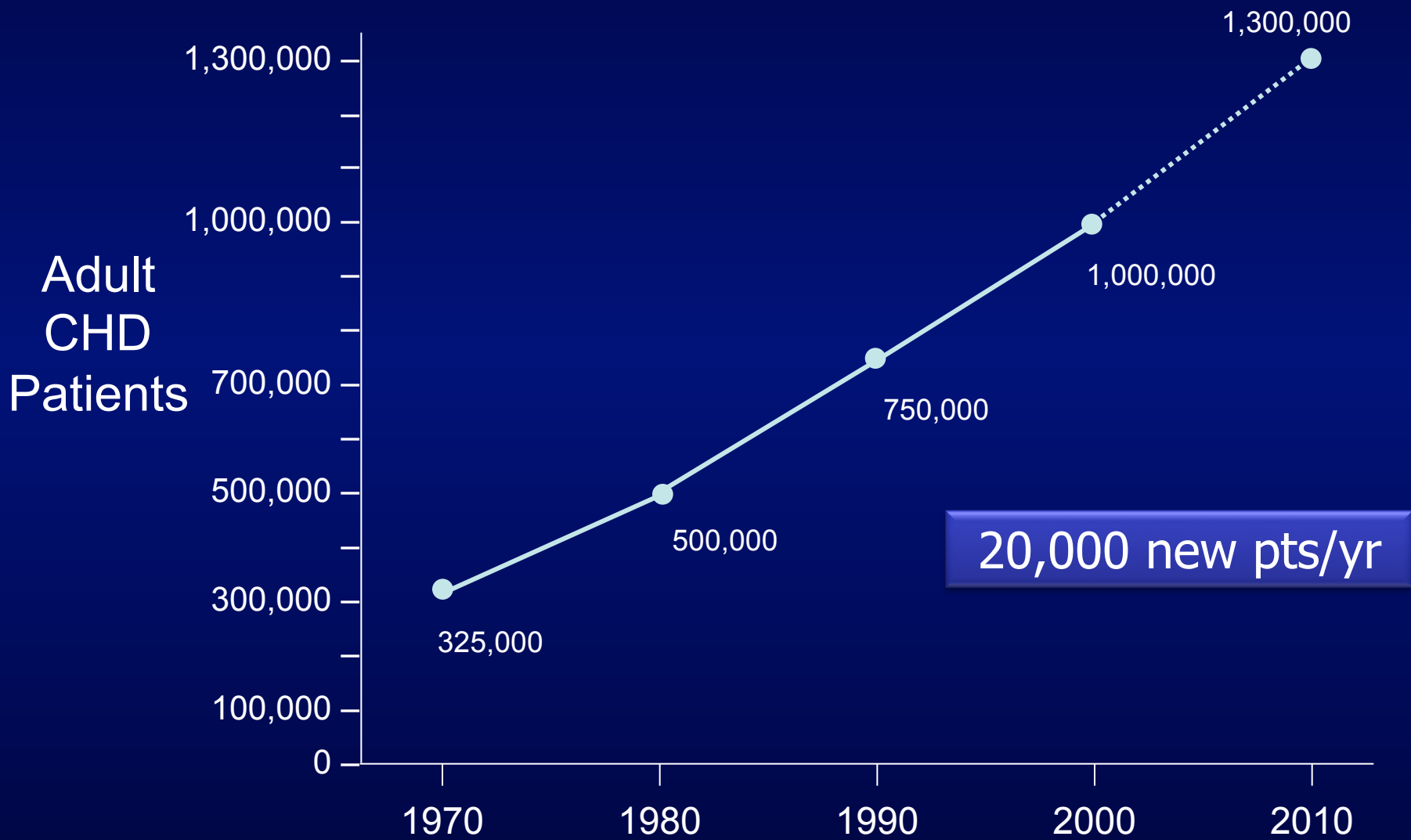
2010

Patients Reaching Adulthood with CHD

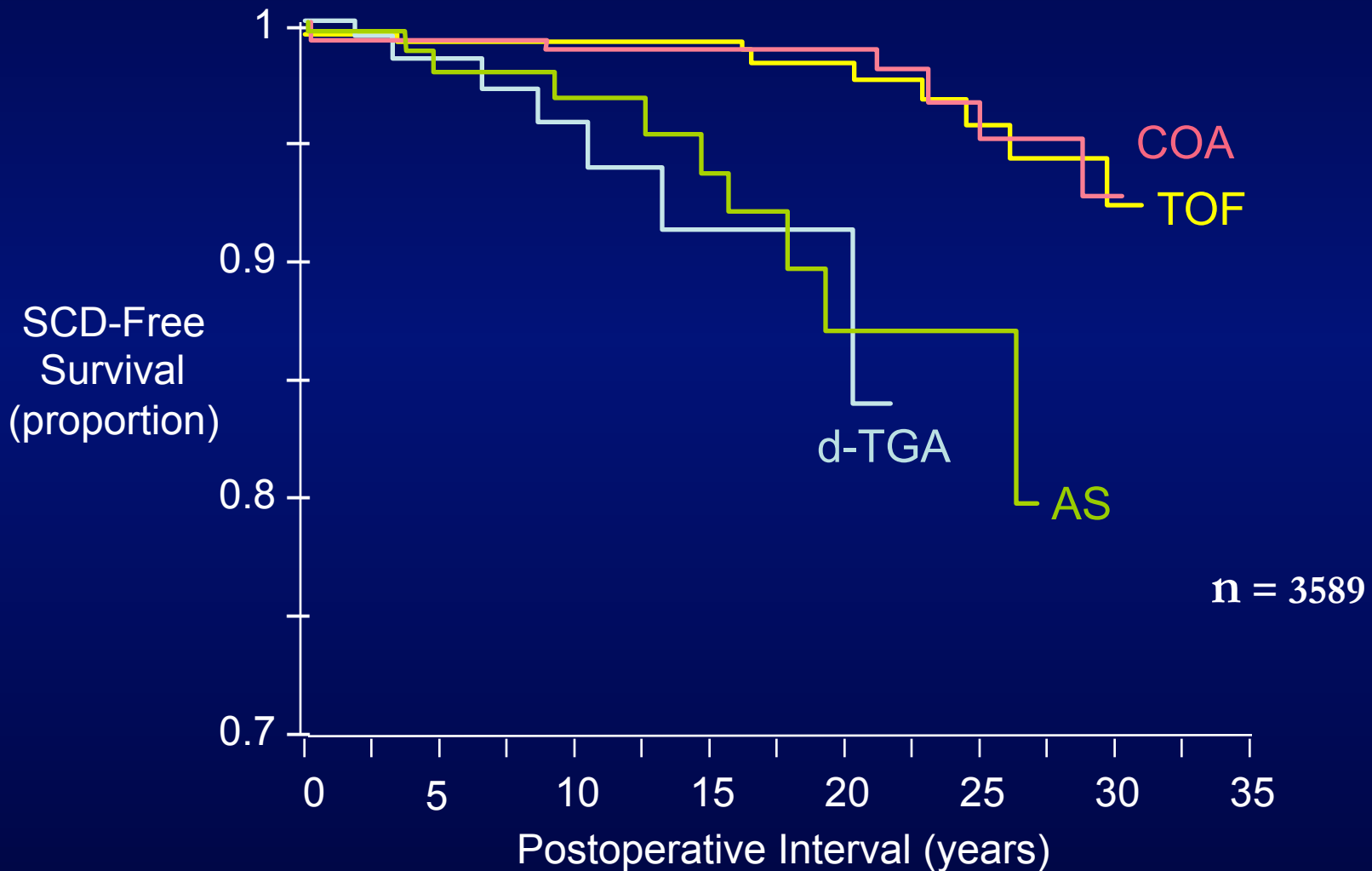


PROBLEM

Patients **Reaching** Adulthood with CHD



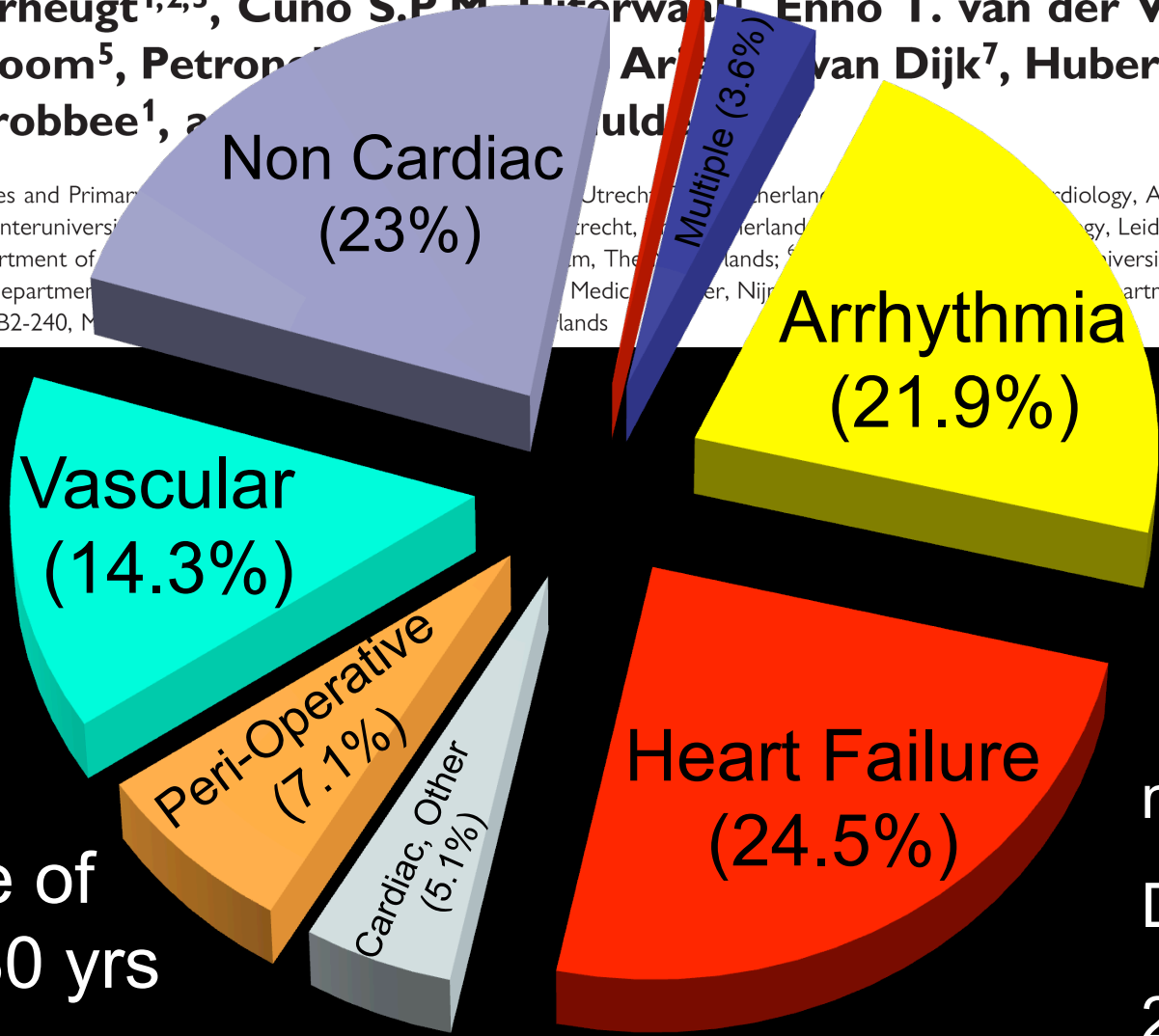
Actuarial Probability of SCD-Free Survival After Surgical Treatment



Mortality in adult congenital heart disease

Carianne L. Verheugt^{1,2,3}, Cuno S.P.M. Hitterwaal¹, Enno T. van der Velde⁴,
 Folkert J. Meijboom⁵, Petronella A. van der Wal⁶, Arno J. van Dijk⁷, Hubert W. Vliegen⁴,
 Diederick E. Grobbee¹, and M. A. M. Mulder¹

¹Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands; ²Department of Cardiology, Academic Medical Center, Amsterdam, The Netherlands; ³Interuniversity Cardiology Institute in the Netherlands, Leiden University Medical Center, Leiden, The Netherlands; ⁴Department of Cardiology, University Medical Center Groningen, Groningen, The Netherlands; ⁵Department of Cardiology, University Medical Center Groningen, Groningen, The Netherlands; ⁶Department of Cardiology, University Medical Center Groningen, Groningen, The Netherlands; ⁷Department of Cardiology, University Medical Center Utrecht, Room B2-240, Middelweg 57, 3512 CX Utrecht, The Netherlands



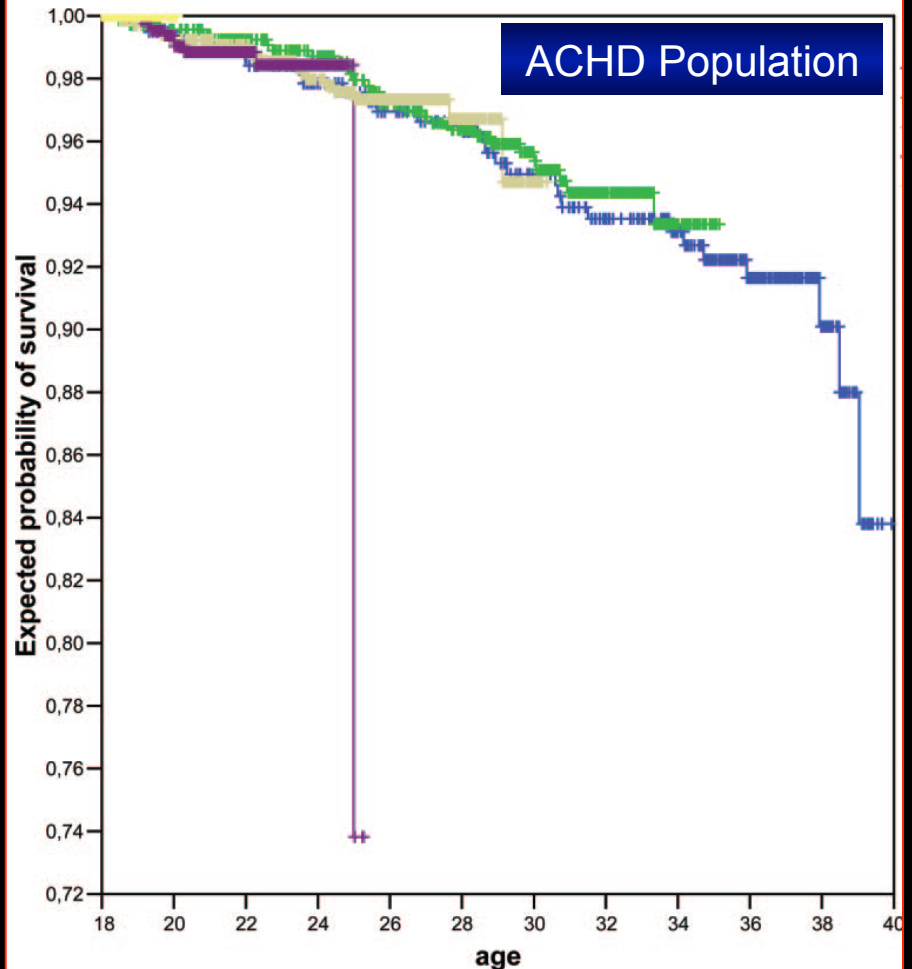
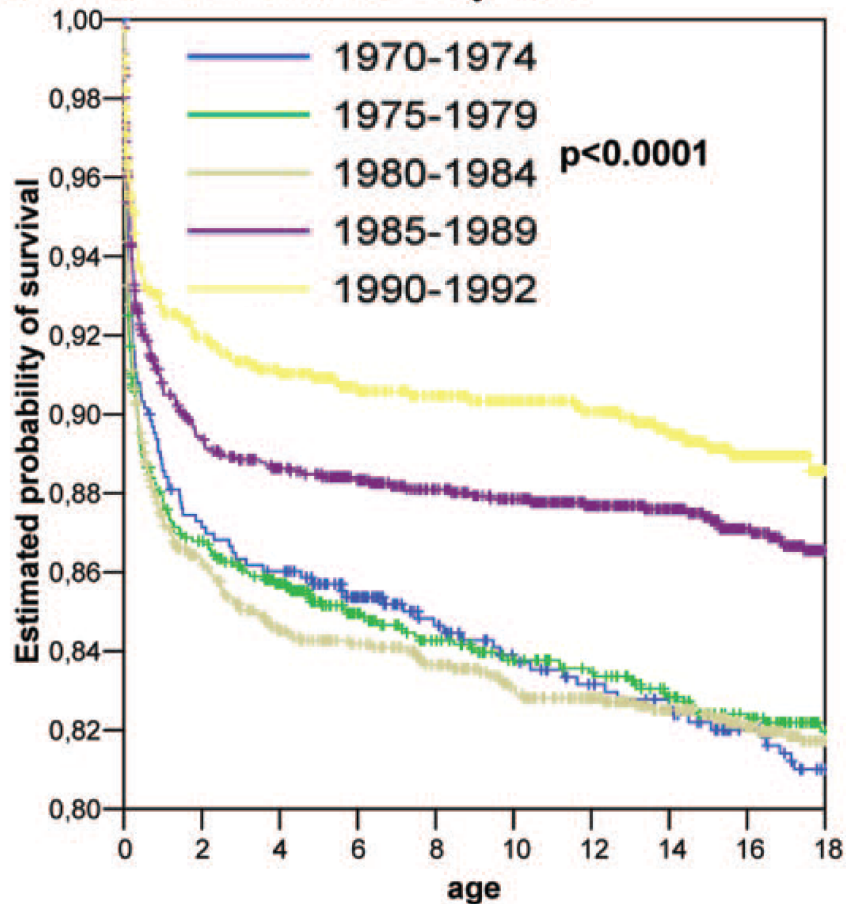
Mean Age of Death < 30 yrs

n = 6,933
 Died 197
 24,865 pt yrs

Temporal Trends in Survival to Adulthood Among Patients Born With Congenital Heart Disease From 1970 to 1992 in Belgium

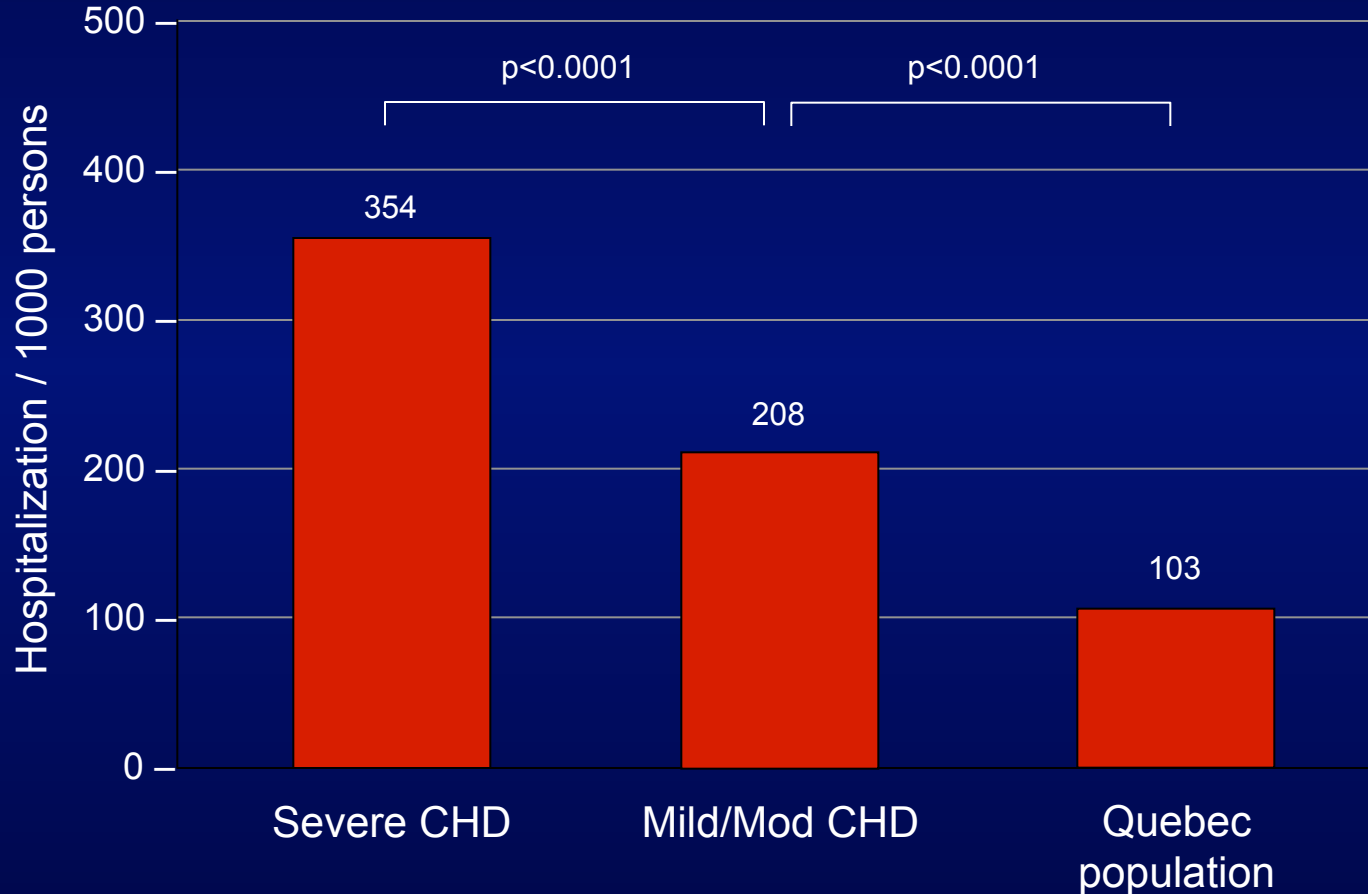
Philip Moons, PhD, RN; Lore Bovijn, MSc, RN; Werner Budts, MD, PhD;
Ann Belmans, MSc; Marc Gewillig, MD, PhD

Survival from birth to 18 years

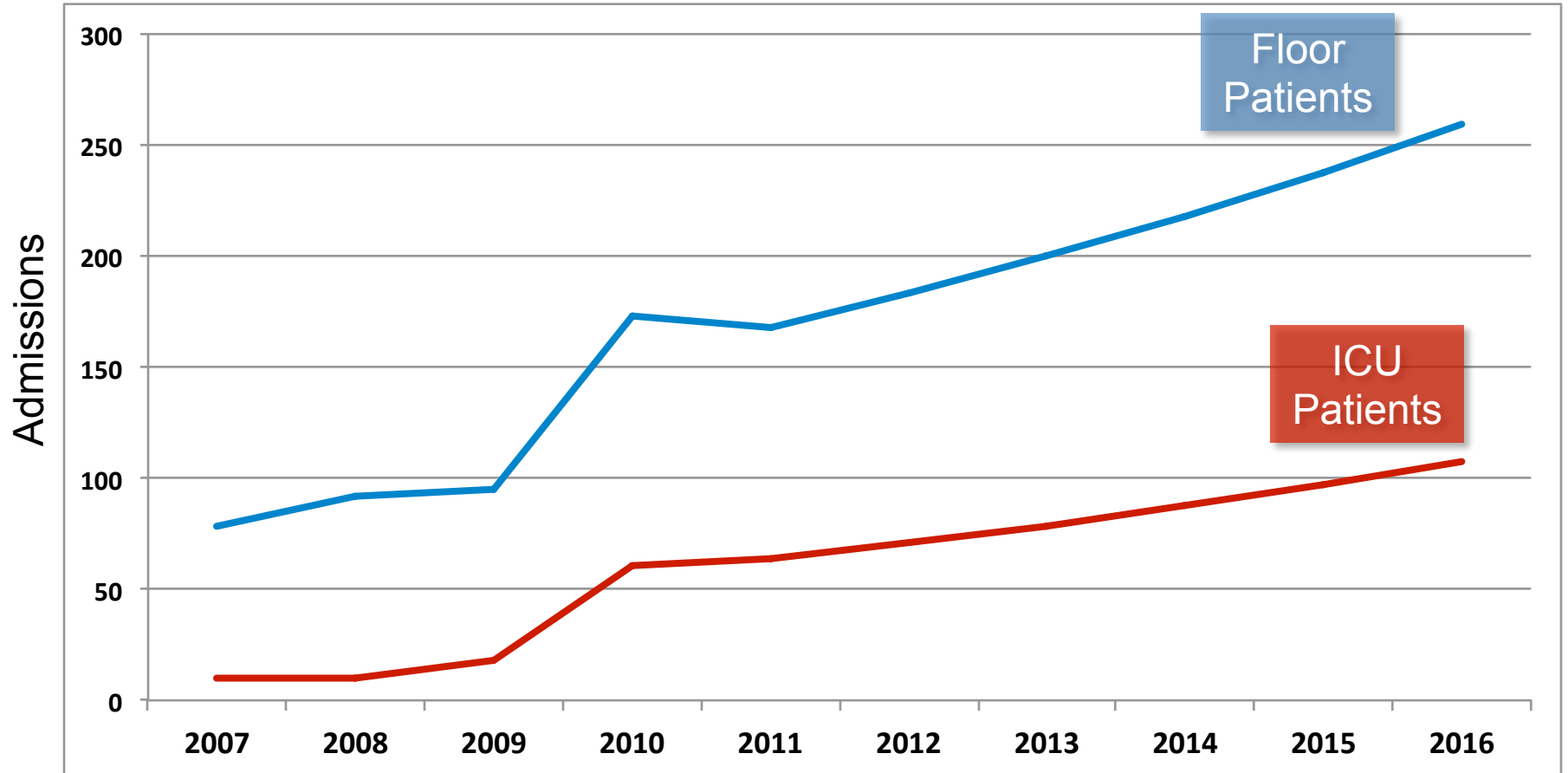


Morbidity

One-year hospitalization rate of patients with severe and other cardiac lesions compared with the adult population of Quebec
(April 4, 1999 to March 31, 2000)



COACH ACHD Inpatient Projections



Patients **Reaching** Adulthood with CHD

Once Reaching ACHD

- **Survival is not as expected**
- **HF and arrhythmia (~45%)**
- **Morbidity is substantial**



Long –Term Complications

Adult Co-Morbidities

- CAD, PVD
 - DM
 - OSA, COPD
 - Renal and Hepatic Insufficiency
- Right Heart Failure
- Left Heart Failure
- Systolic
 - Diastolic
- Pulmonary Hypertensi
- Residual Shunts
- Valvular Disease
- Adults with Congenital Heart Disease
- Atrial
- Ventricular
- Sudden Death
- Ischemic Arteriosclerosis



**38 yo with TOF s/p
repair, DM, presents
with chest pain**

Long –Term Complications

Arrhythmias

- Atrial
- Ventricular
- Sudden Death

Heart Failure

- Right Heart Failure
- Left Heart Failure
 - Systolic
 - Diastolic
- Pulmonary Hypertension

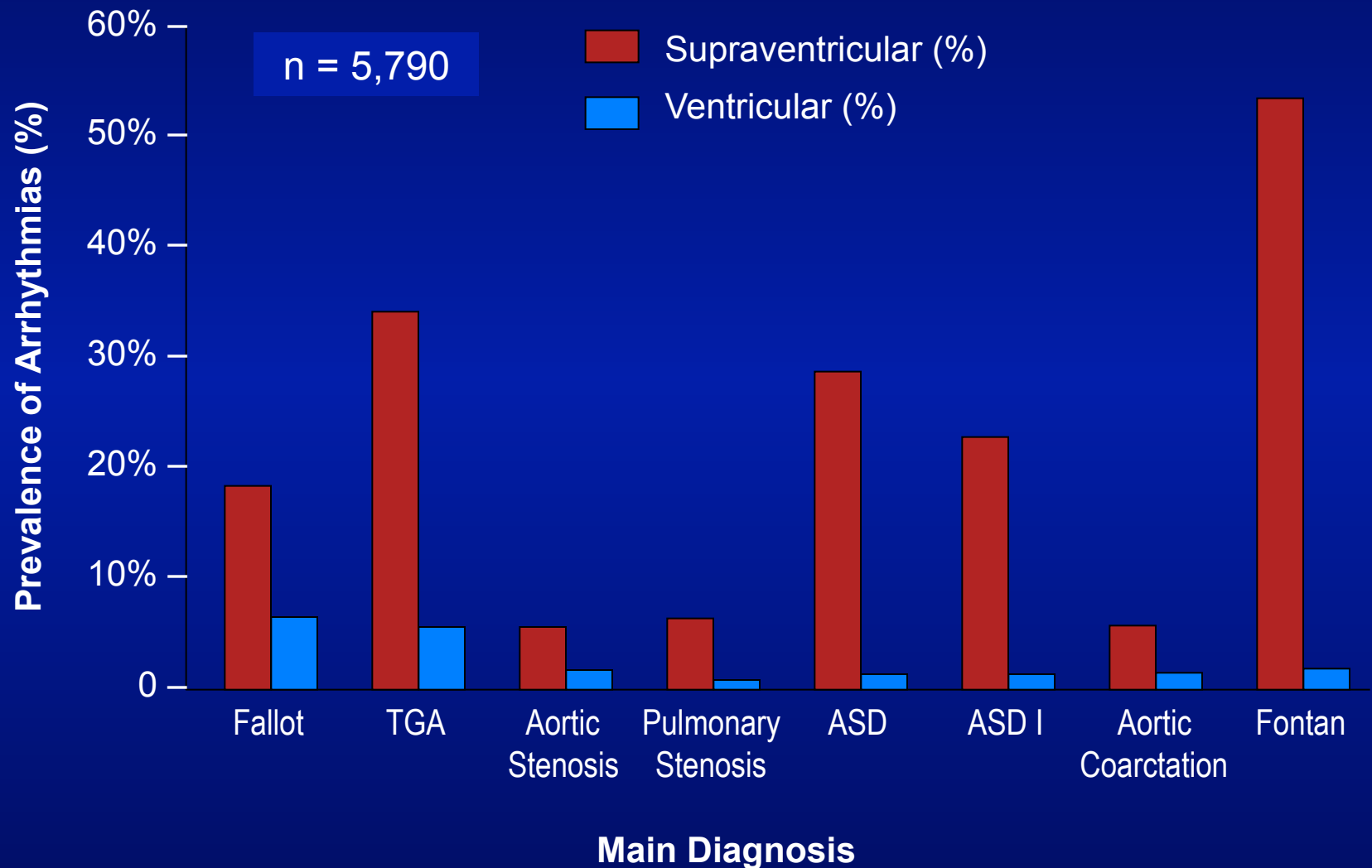
Adults with Congenital Heart Disease

Vascular Lesions

Valvular Disease

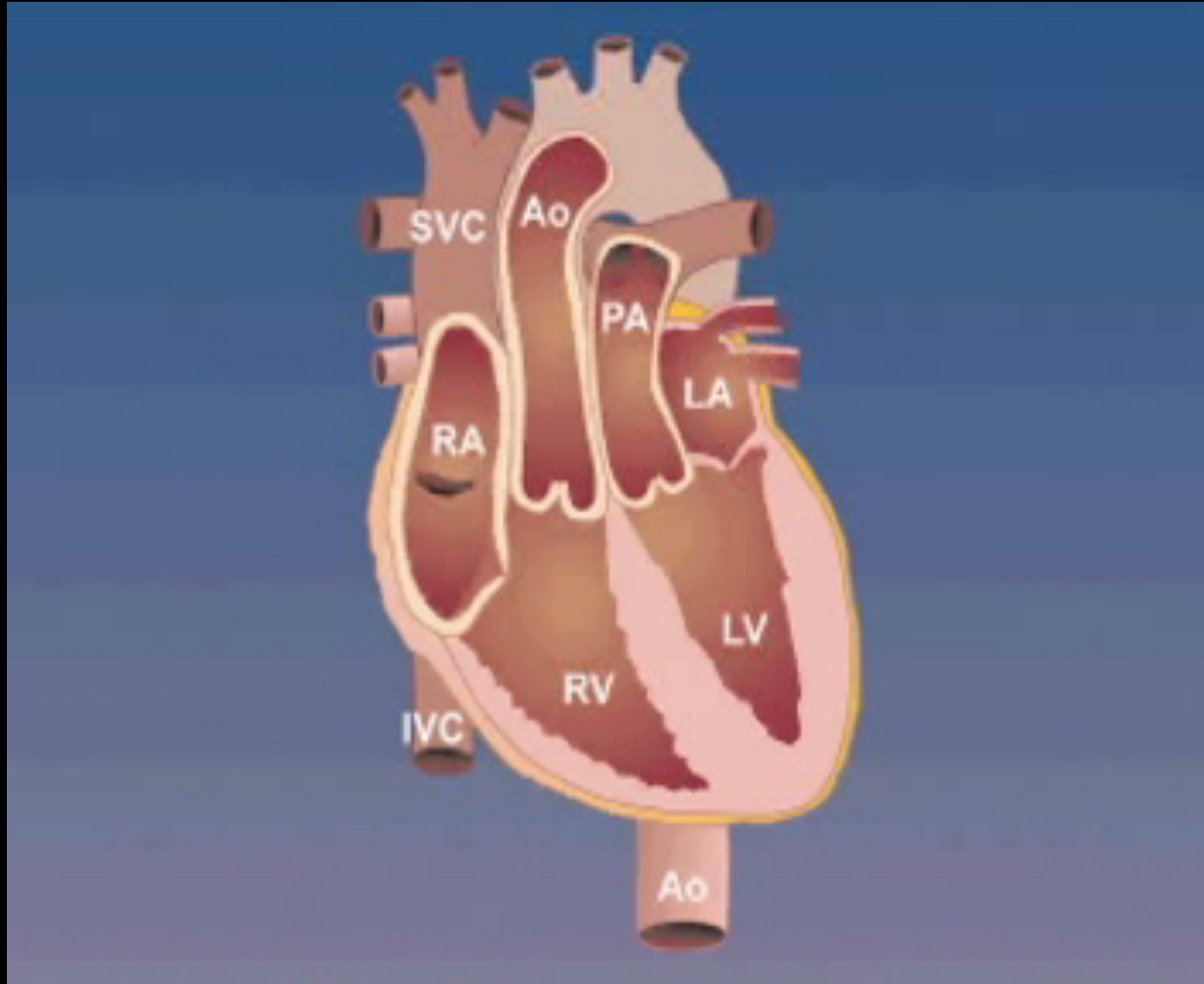
Residual Shunts

Prevalence of Arrhythmias in ACHD Patients

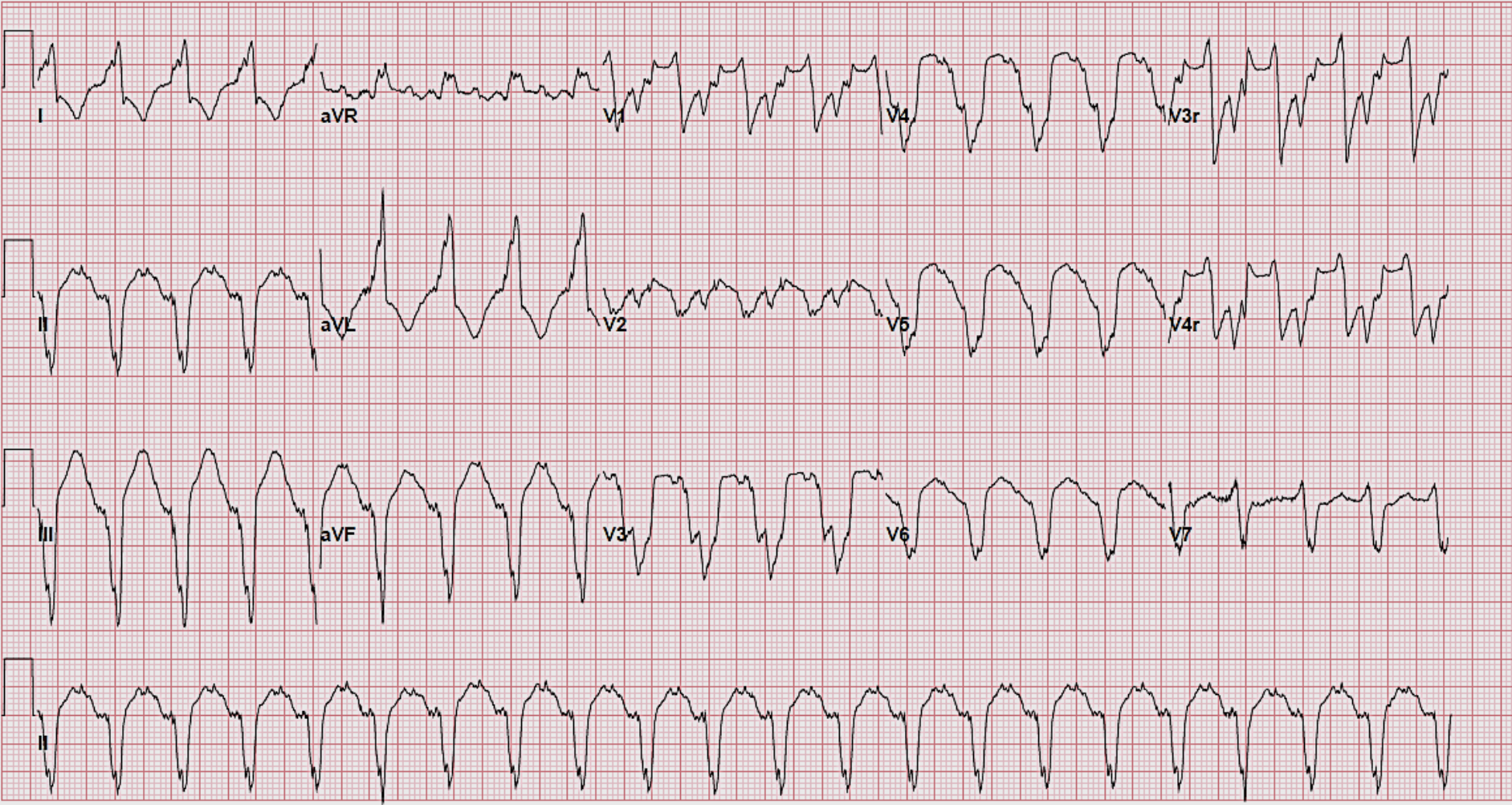


D-Transposition of the Great Arteries

Example: Scar tissue



CSN:

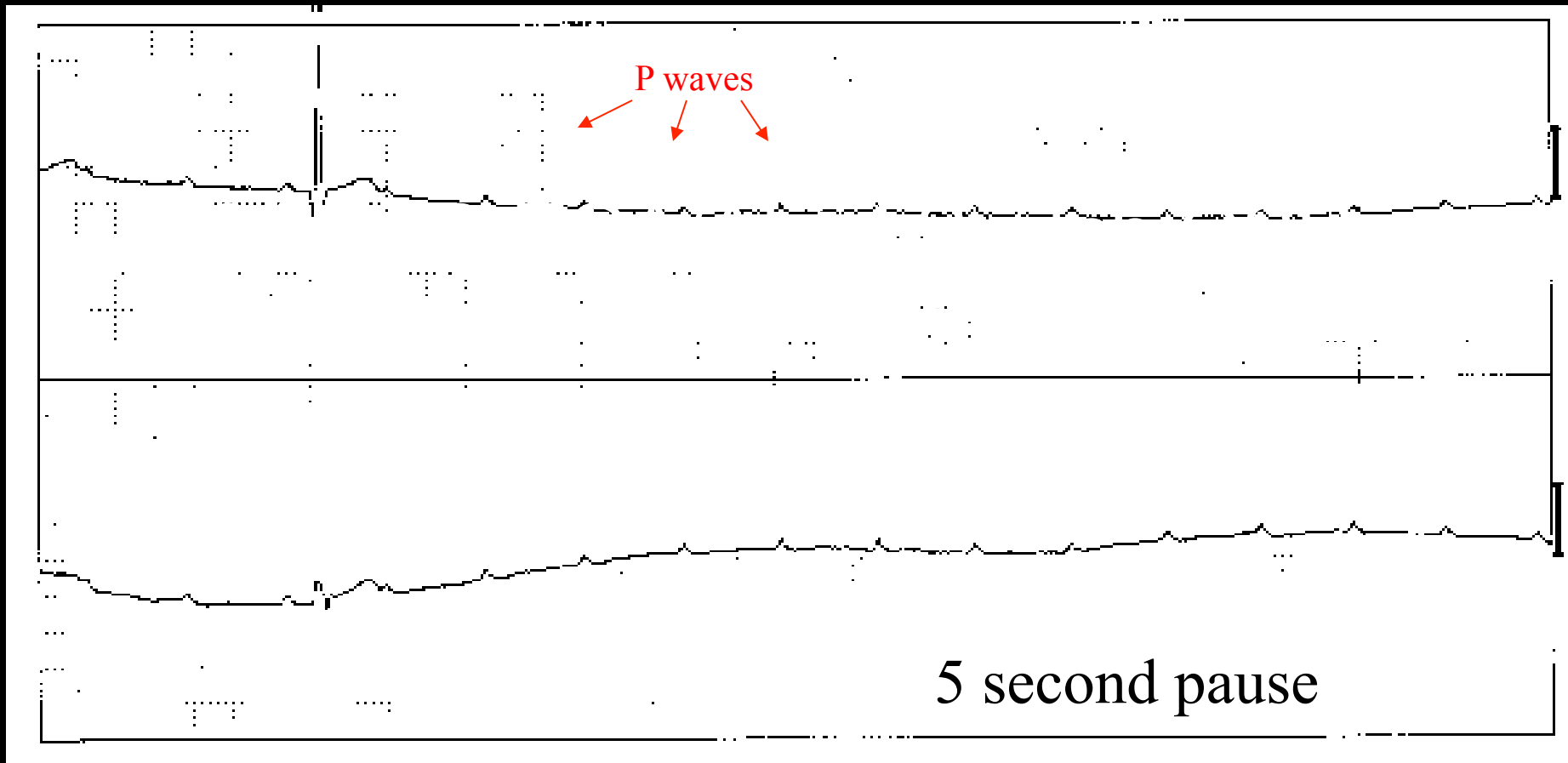


25mm/s 10mm/mV 150Hz 7.1.1 12SL 237 CID: 1

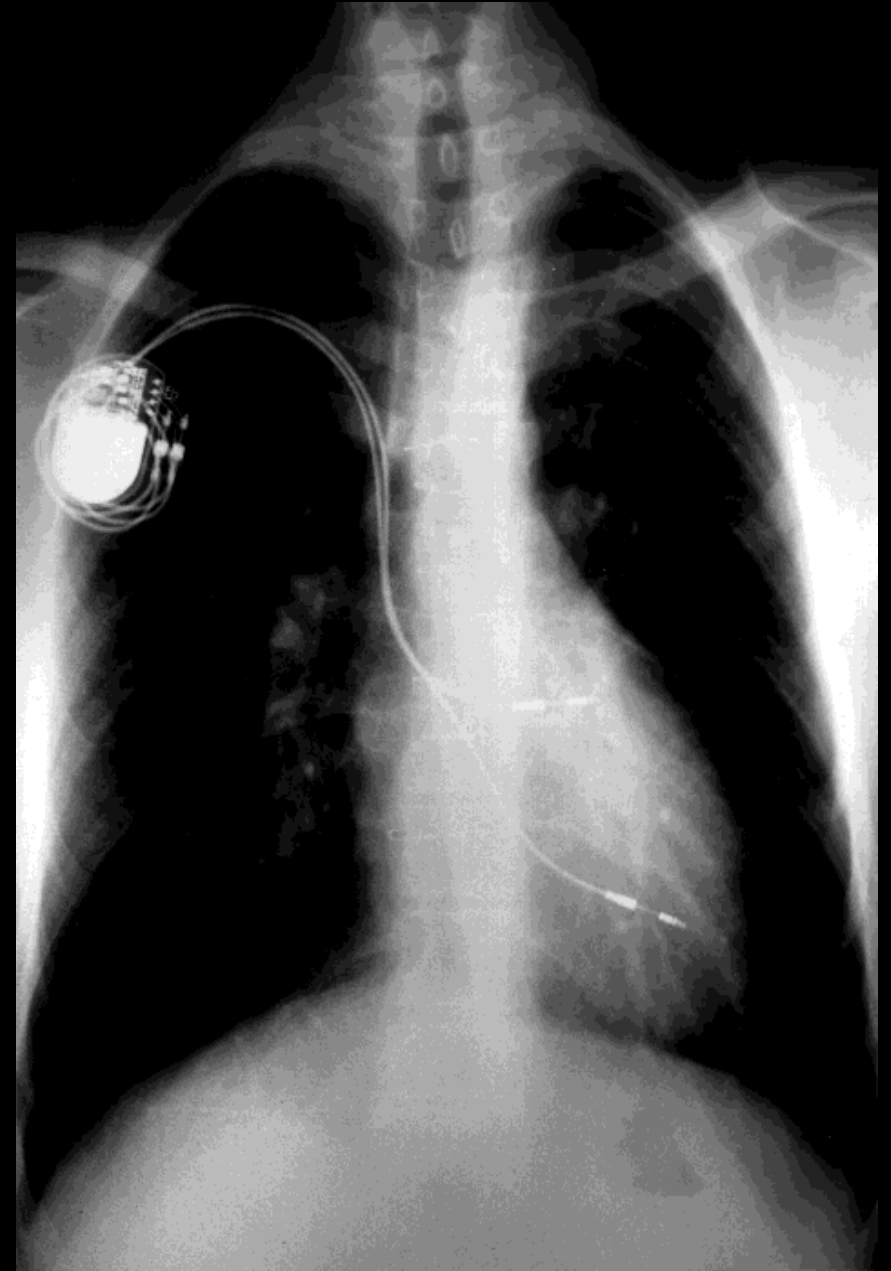
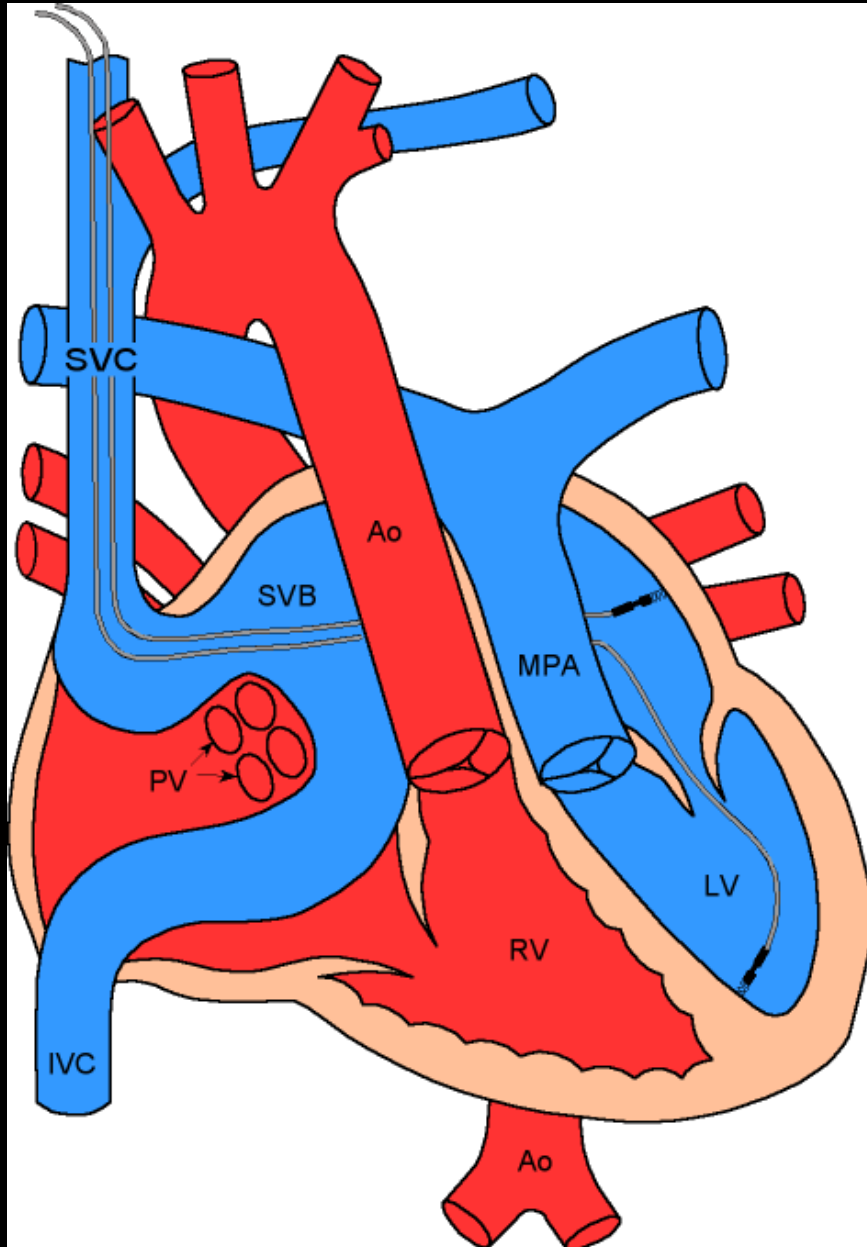
EID:136 EDT: 10:02 03-NOV-2011 ORDER: ACCOUNT: 607793816

D-Transposition of the Great Arteries

Holter monitor



D-TGA/Atrial Switch

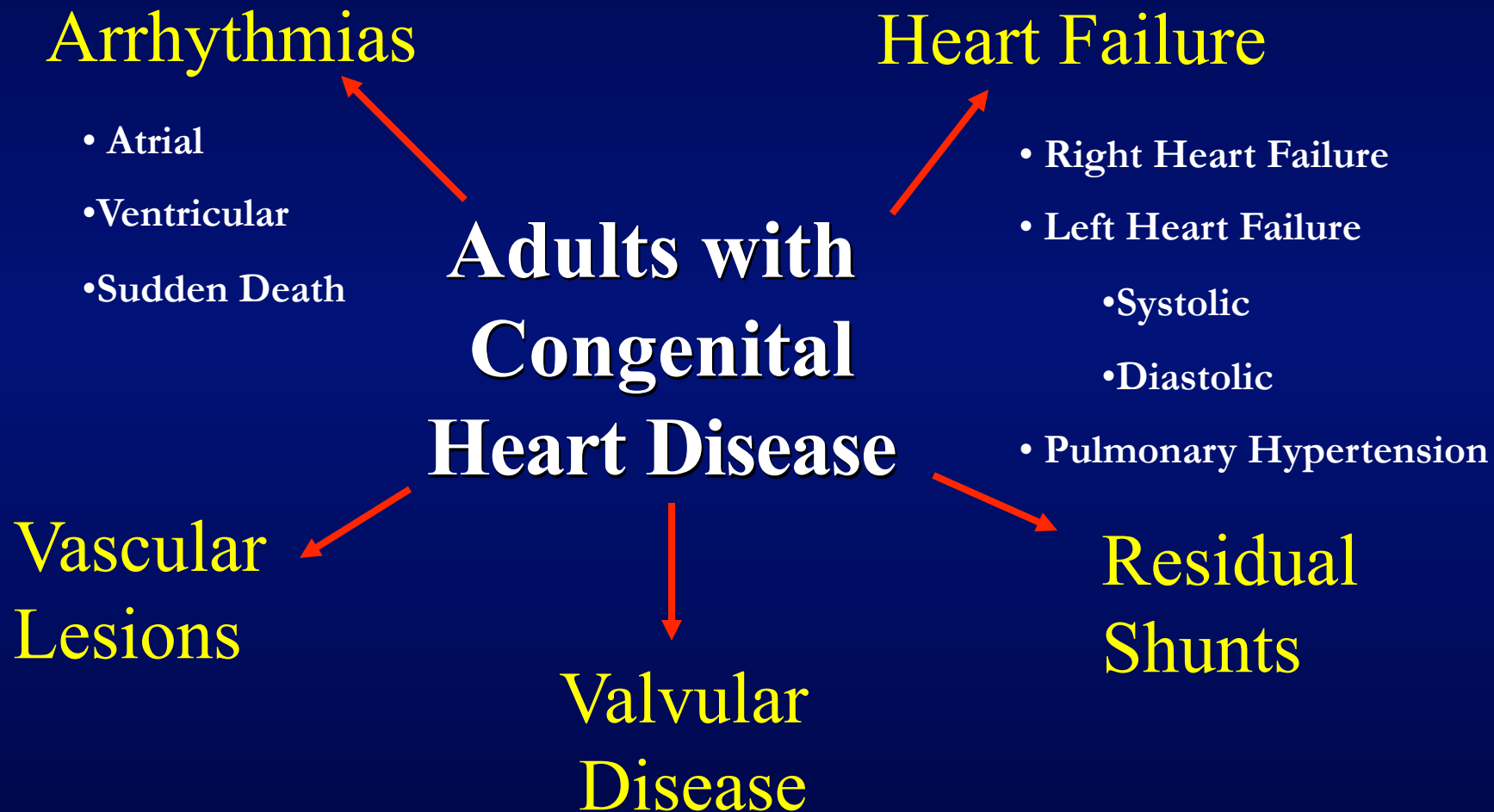


Rate of Inducible Ventricular Arrhythmia in Adults With Congenital Heart Disease

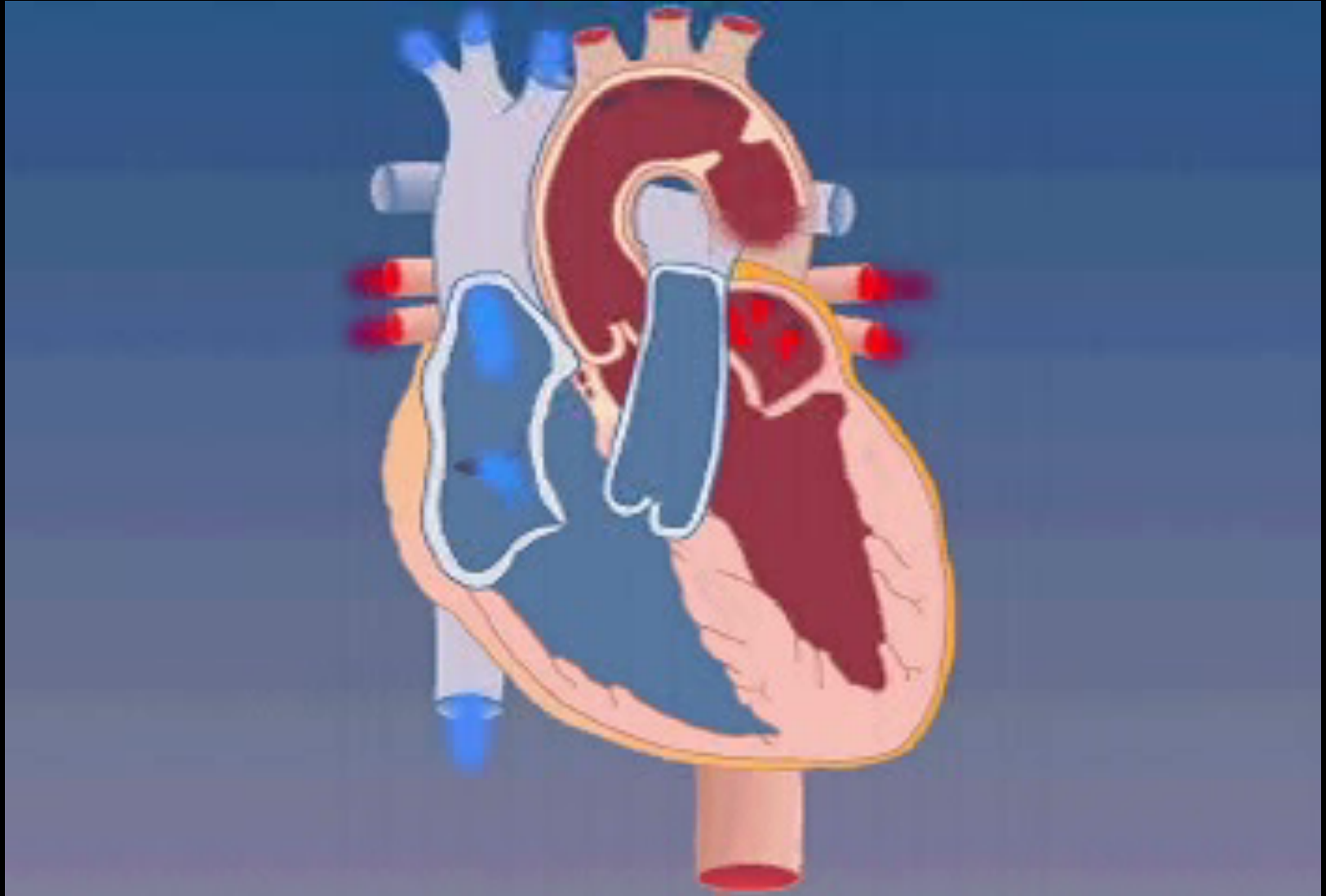
Shane F. Tsai, MD^{a,b,c,*}, David P. Chan, MD^{a,b}, Pamela S. Ro, MD^{a,b}, Bethany Boettner, MA^a, and Curt J. Daniels, MD^{a,b,c}

Patients with adult congenital heart disease are at increased risk of ventricular arrhythmia (VA) and sudden cardiac death, although no clear predictors have been found. Ventricular programmed stimulation has been shown to predict clinical ventricular tachycardia and sudden death events, but the role of screening electrophysiology studies (S-EPSs) in this population remains poorly defined. Therefore, we sought to determine the prevalence of inducible VA and to evaluate the clinical predictors in a heterogeneous group of patients with adult congenital heart disease (≥ 18 years old) undergoing S-EPSs at preoperative or interventional cardiac catheterization. Studies for the primary evaluation of clinical VA were excluded. The demographic, clinical, and diagnostic findings were compared between the patients with positive and negative findings. From 2005 to 2009, 80 patients (mean age 30 ± 9 years) underwent S-EPSs, and 23 had inducible VA. The diagnoses for those with studies positive for VA included tetralogy of Fallot ($n = 12$), d-transposition of the great arteries ($n = 6$), pulmonary stenosis ($n = 2$), double outlet right ventricle ($n = 1$), double inlet left ventricle ($n = 1$), and Ebstein's anomaly ($n = 1$). Men were significantly more likely to have a S-EPS positive for VA ($p = 0.015$). Increasing QRS duration, decreasing peak oxygen uptake (percentage of predicted), and ventricular fibrosis with cardiovascular magnetic resonance imaging were significantly associated with studies positive for VA ($p < 0.05$). Combined fibrosis and a peak oxygen uptake $< 80\%$ of predicted had 100% sensitivity for positive VA findings. In conclusion, almost 30% of those with adult congenital heart disease undergoing S-EPSs had inducible VA. A prolonged QRS duration, diminished exercise capacity, and the presence of ventricular fibrosis were significantly associated with findings positive for VA and might improve patient selection for screening evaluations. © 2010 Elsevier Inc. All rights reserved. (Am J Cardiol 2010;106:730–736)

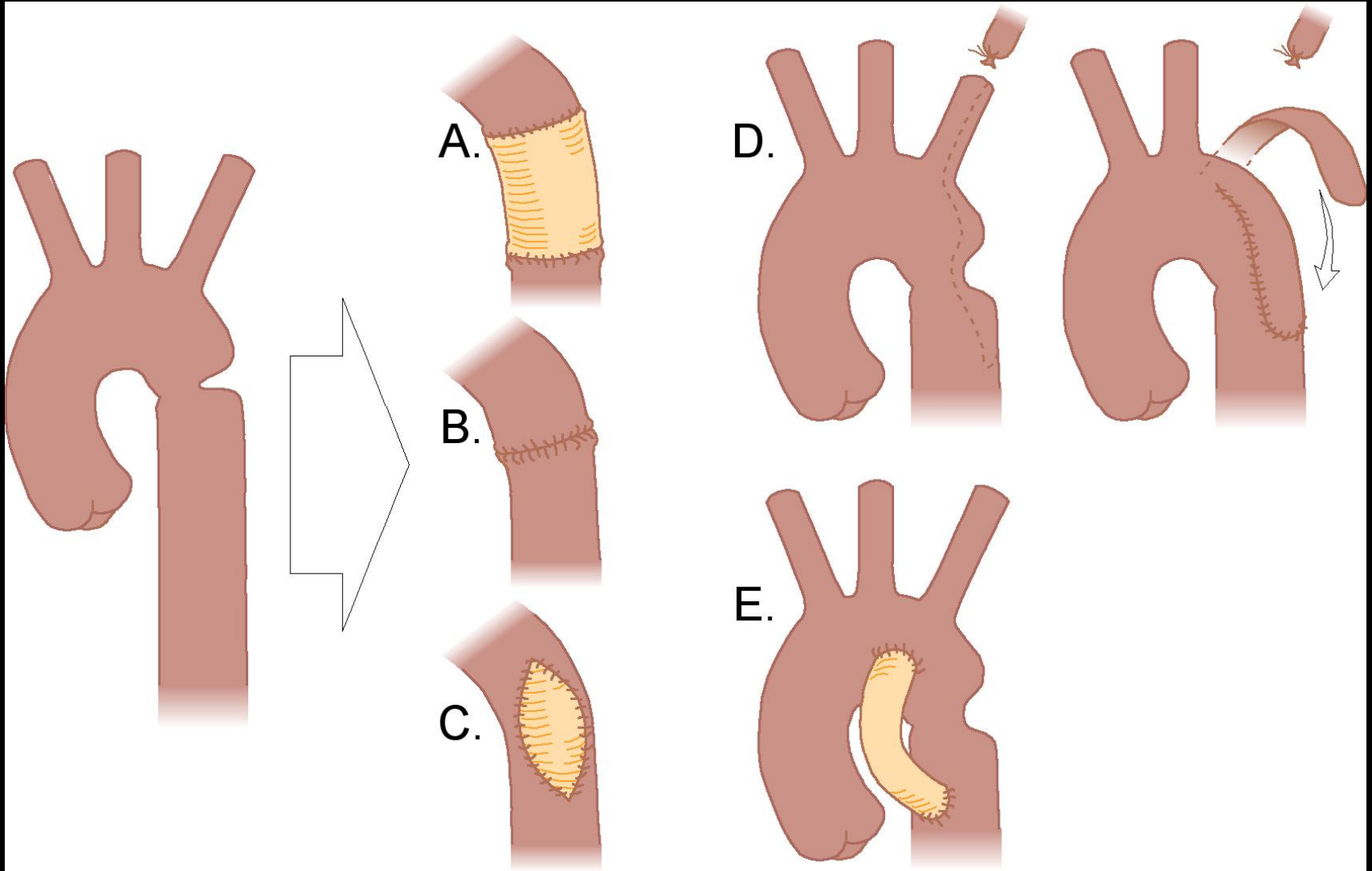
Long –Term Complications



COA



Coarctation of the Aorta - Surgery



Coarctation of the Aorta



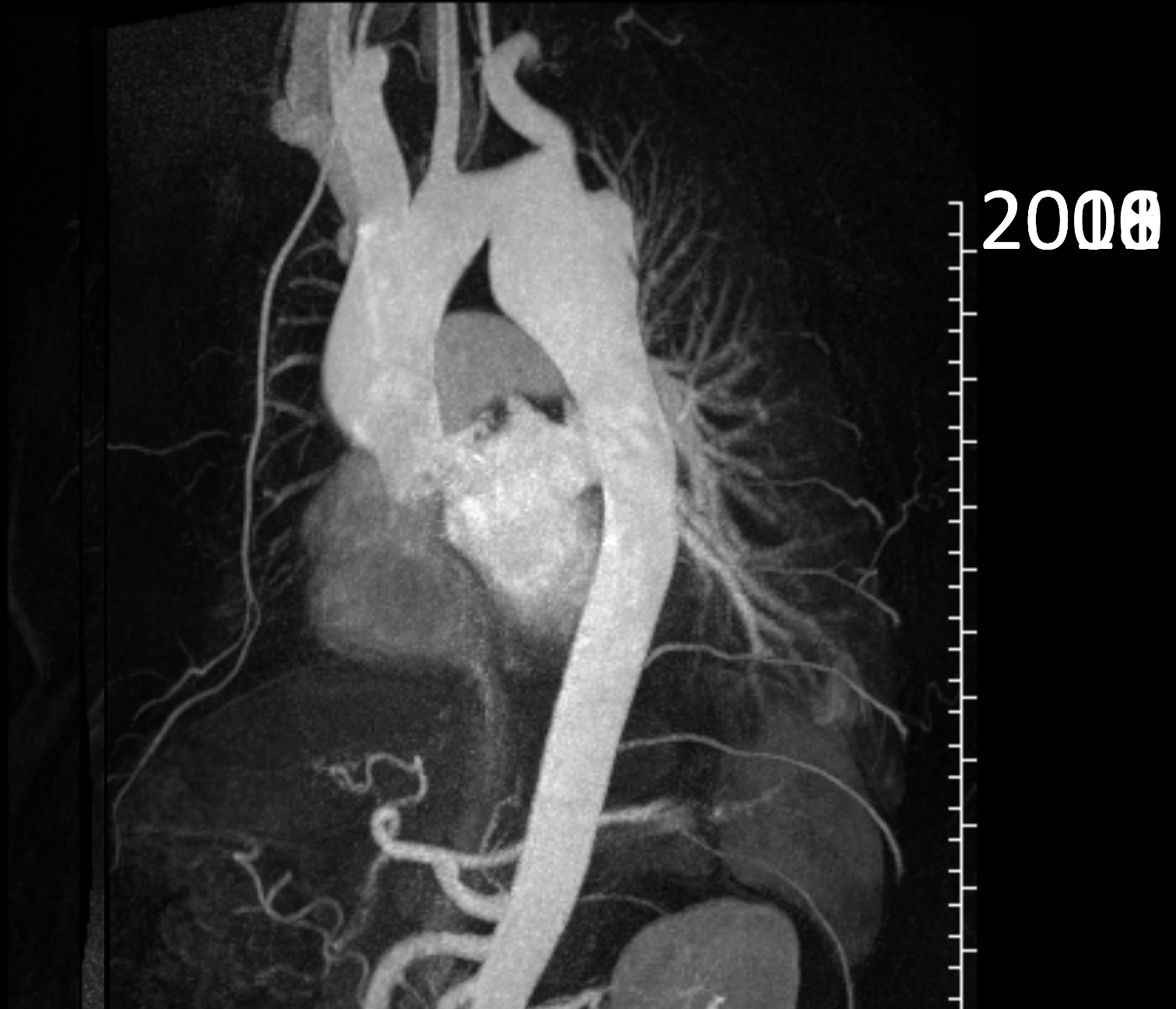
**38 yo with end-end
anastomosis for COA**

T 3

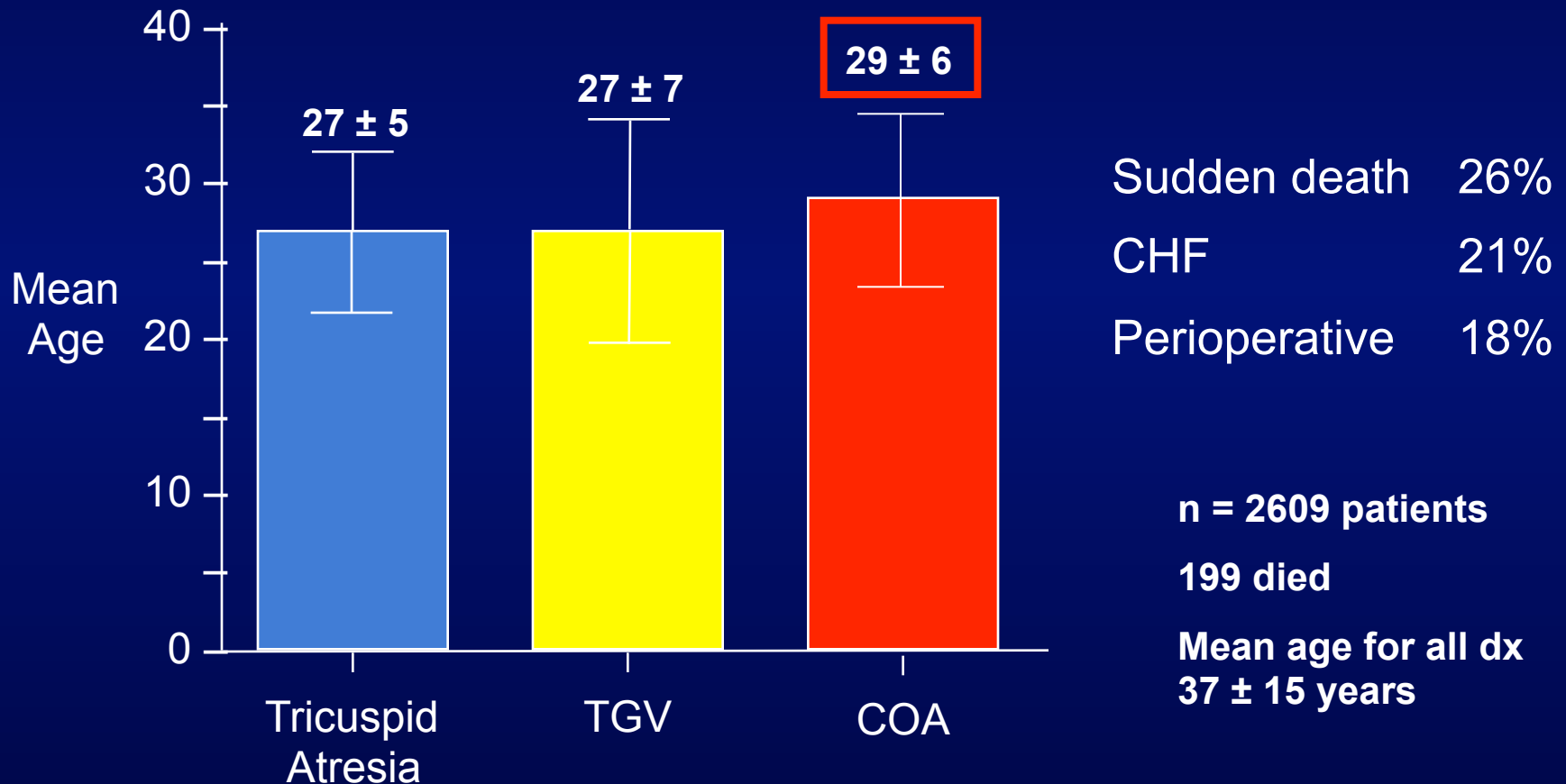


11

35 yo with COA s/p patch aortoplasty



Age at Death for Adults with CHD



COA and Dissection



- 29 yo with h/o COA s/p end-end anastomosis
- Presented with epigastric and back pain
- CMR demonstrated Type B aortic dissection
- To the OR, repaired with a 26 mm vascular graft

PRACTICE GUIDELINE: FULL TEXT

ACC/AHA 2008 Guidelines for the Management of Adults With Congenital Heart Disease

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Develop Guidelines on the Management of Adults With Congenital Heart Disease)

Developed in Collaboration With the American Society of Echocardiography, Heart Rhythm Society, International Society for Adult Congenital Heart Disease, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons

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6.12.3. Recommendations for Clinical Evaluation and Follow-Up

CLASS I

3. Every patient with coarctation (repaired or not) should have at least 1 cardiovascular MRI or CT scan for complete evaluation of the thoracic aorta and intracranial vessels. (*Level of Evidence: B*)

6.14.3. Recommendations for Key Issues to Evaluate and Follow-Up

CLASS I

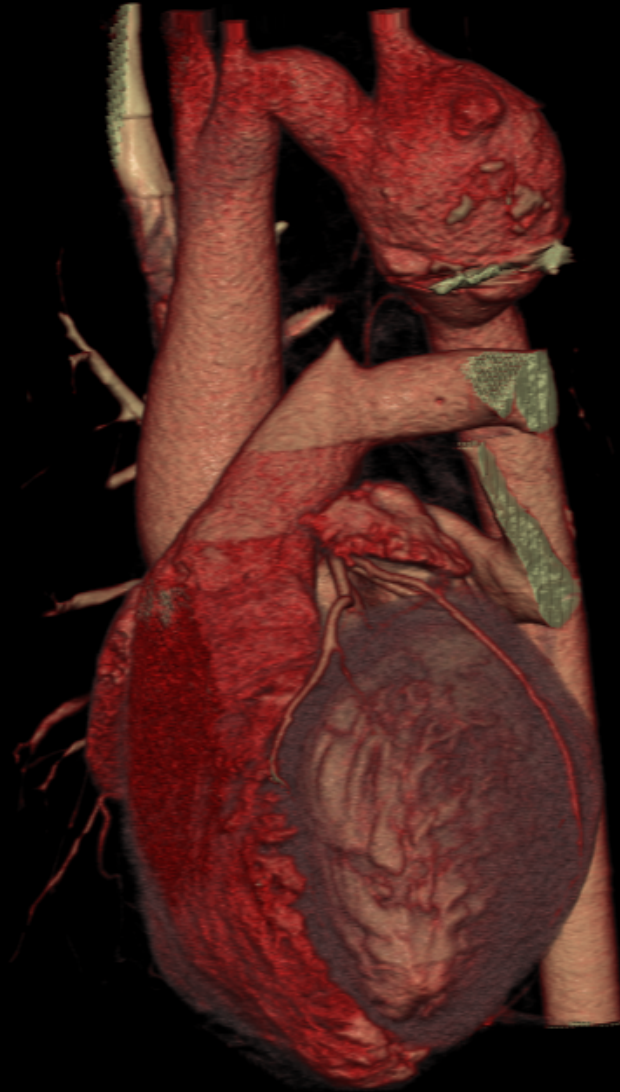
5. Evaluation of the coarctation repair site by MRI/CT should be performed at intervals of 5 years or less, depending on the specific anatomic findings before and after repair. (*Level of Evidence: C*)

Usefulness of Screening Cardiovascular Magnetic Resonance Imaging to Detect Aortic Abnormalities After Repair of Coarctation of the Aorta

Shane F. Tsai, MD^{a,b,*}, Mira Trivedi^b, Bethany Boettner, MA^c, and Curt J. Daniels, MD^{a,b}

Guidelines recommend screening cardiovascular magnetic resonance (Sc-CMR) imaging for all patients after coarctation of the aorta repair, although there are limited data verifying its clinical utility. Therefore, we sought to assess the value of Sc-CMR in detecting aortic complications and at-risk abnormalities after coarctation of the aorta repair and to identify significant risk factors. We reviewed 76 patients (mean age 31 ± 10 years), including 40 with symptomatically indicated CMR (Sx-CMR) and 36 with Sc-CMR studies. CMR angiograms were evaluated for aortic abnormalities. Recoarctation was defined as residual narrowing/descending aorta at the diaphragm ≤ 0.5 (at risk ≤ 0.75), ascending aorta aneurysm as maximum ascending cross-sectional area/height ≥ 10 (at risk ≥ 5), and descending aorta aneurysm as maximum descending diameter/descending aorta at the diaphragm ≥ 1.5 (at risk ≥ 1.25). Aortic complications or abnormalities were found in 45 patients (59%). No patient met criteria for recoarctation (at risk 10 Sx-CMR vs 5 Sc-CMR). Significant risk factors included heart failure symptoms and female gender ($p < 0.05$). One patient (Sc-CMR) had ascending aneurysm (at risk 17 Sx-CMR vs 8 Sc-CMR). Time from repair was a significant predictor ($p < 0.05$). There were 10 patients (6 Sx-CMR vs 4 Sc-CMR) with descending aneurysm (at risk 8 Sx-CMR vs 7 Sc-CMR). Cardiovascular symptoms, hypertension, and echocardiogram were not predictive. In conclusion, >50% of patients undergoing Sc-CMR had aortic abnormalities, which was not significantly different from those undergoing Sx-CMR. In particular, Sc-CMR identified descending aorta aneurysms that were not predicted by clinical parameters or echocardiogram. © 2011 Elsevier Inc. All rights reserved. (Am J Cardiol 2011;107:297–301)

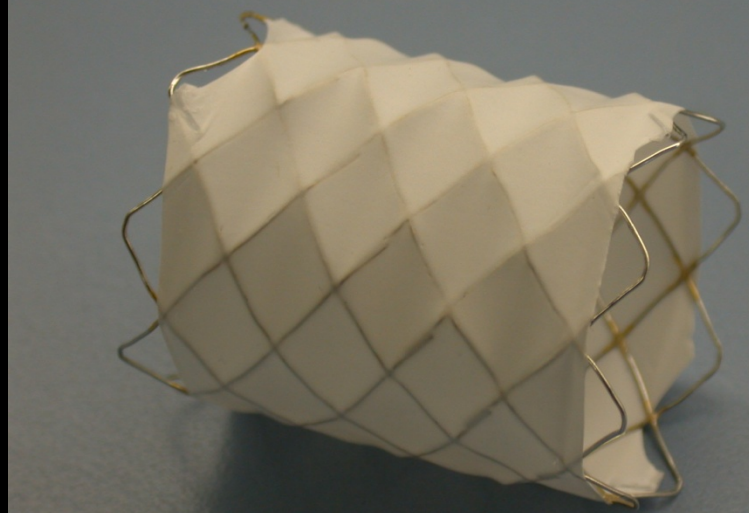
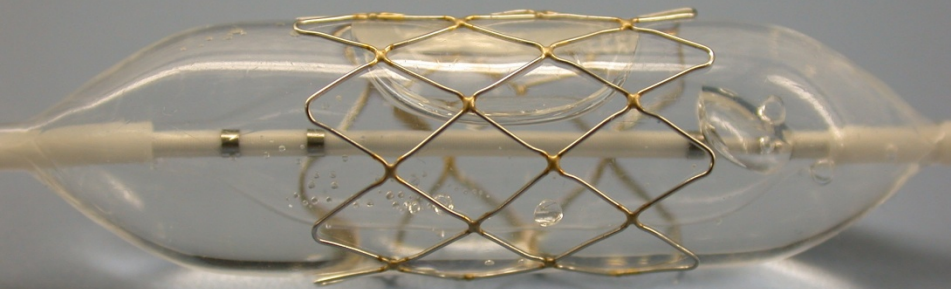
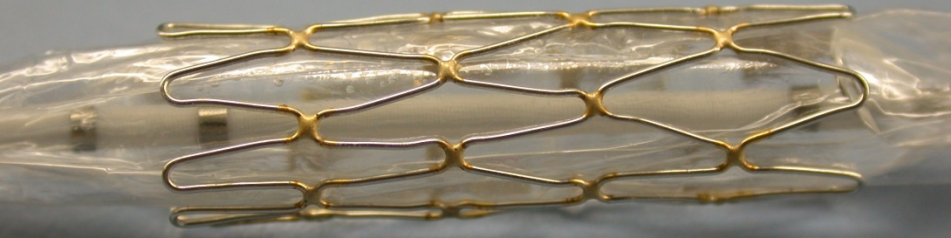
Screening Study 25 yo



**28 yo s/p rCOA
asymptomatic surveillance**



e-PTFE Covered NuMED CP Stent & BIB Catheter

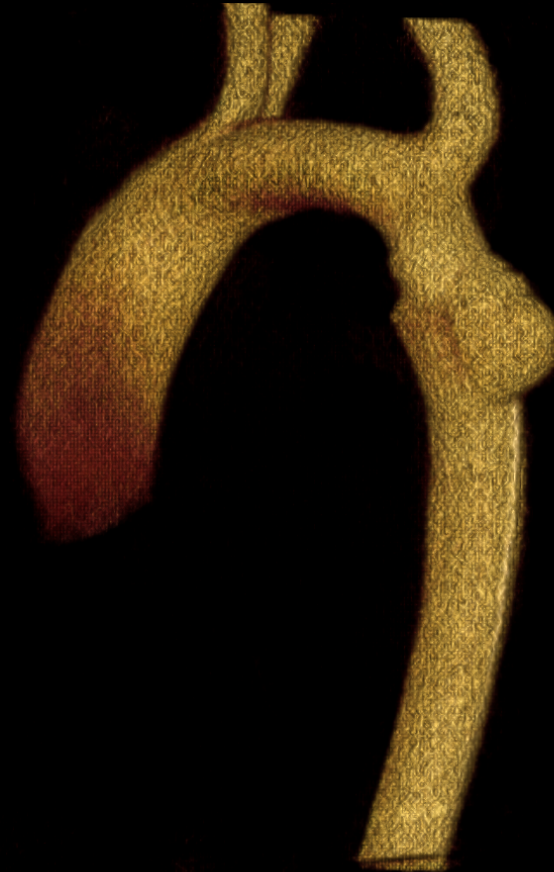


Non-FDA approved

28 yo COA s/p balloon angioplasty



Lossy C

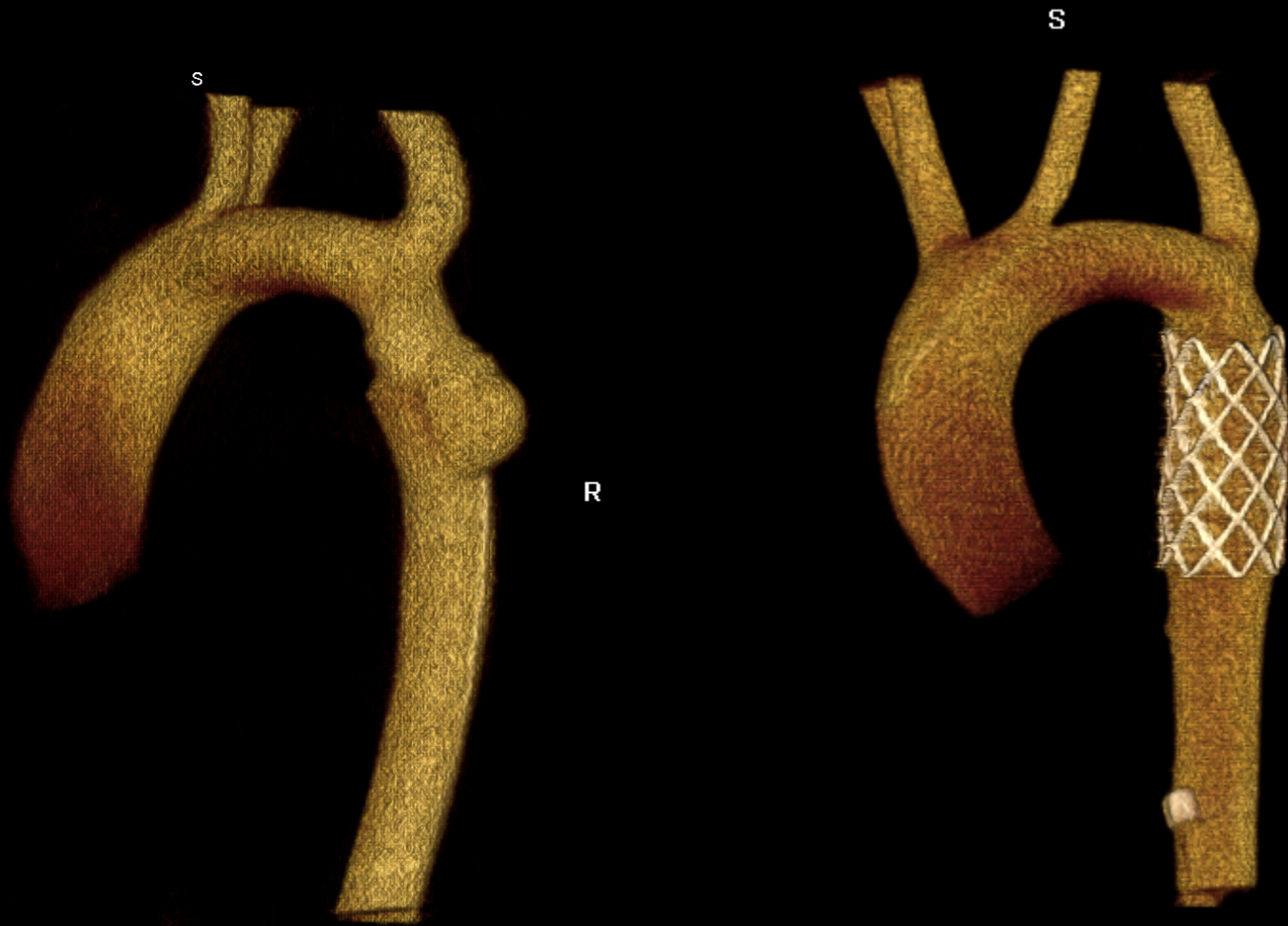


P

Rotational 3D Angiography

Vitrea®
W/L: 97/88
Segmented
VR: Vessel Only

28 yo s/p rCOA asymptomatic surveillance



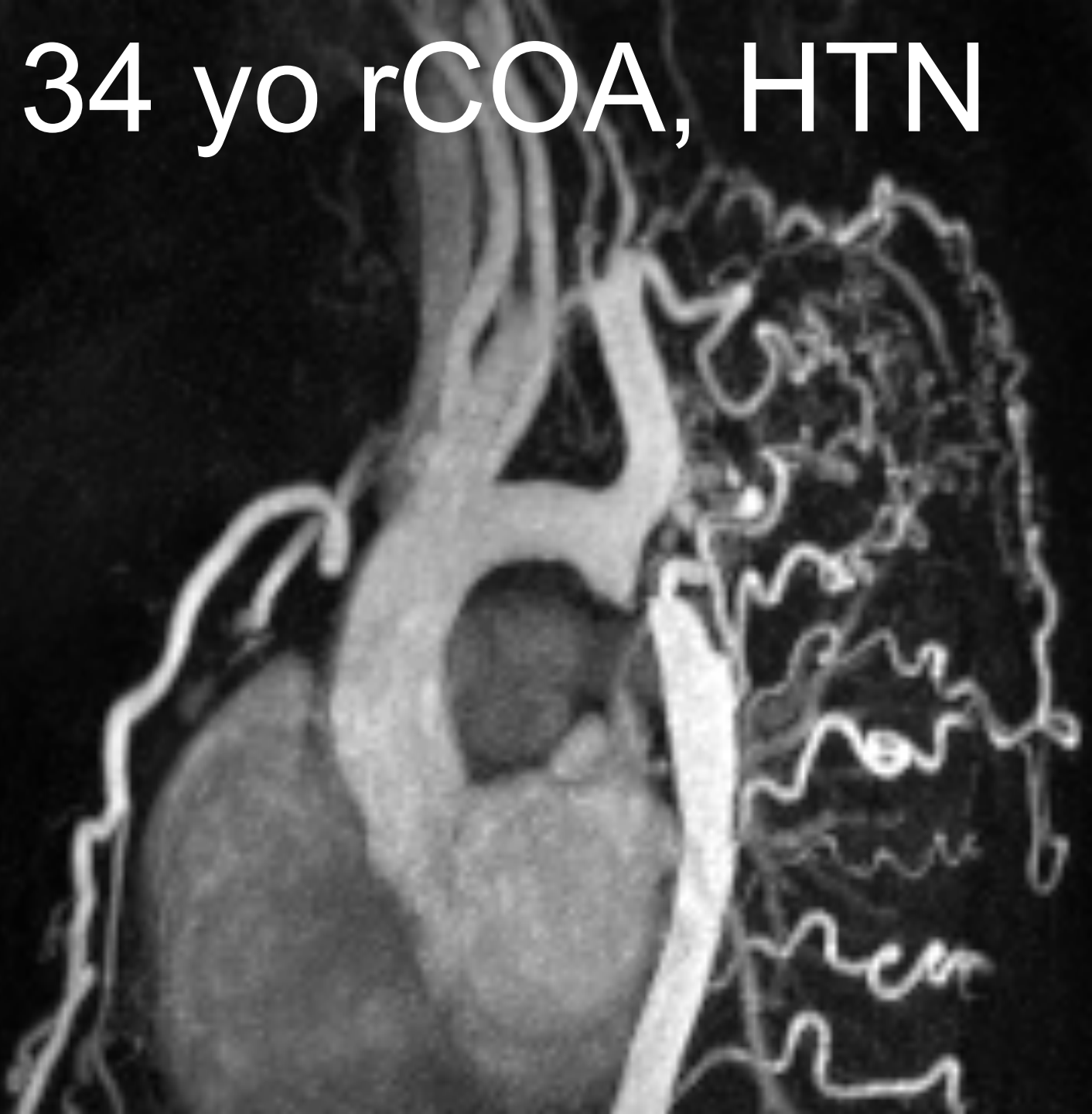
LAO90 CRA0

VR: LAO23 CRA0

Vitreac®
W/L:93/99
Segmented
VR: Vessel Only

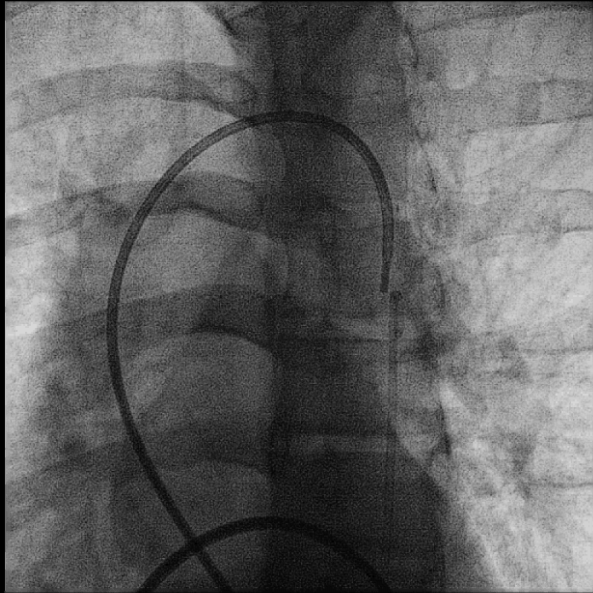
34 yo rCOA, HTN

Lossy Comp

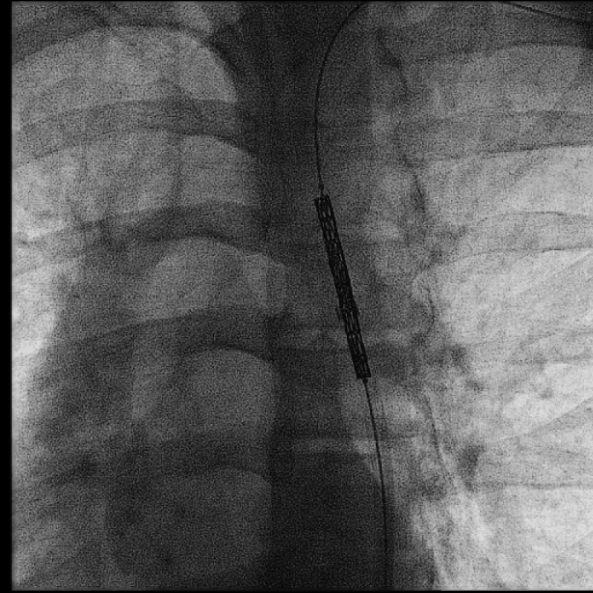


34 yo rCOA, 8-Zig 45mm on 14mm x 5cm BIB

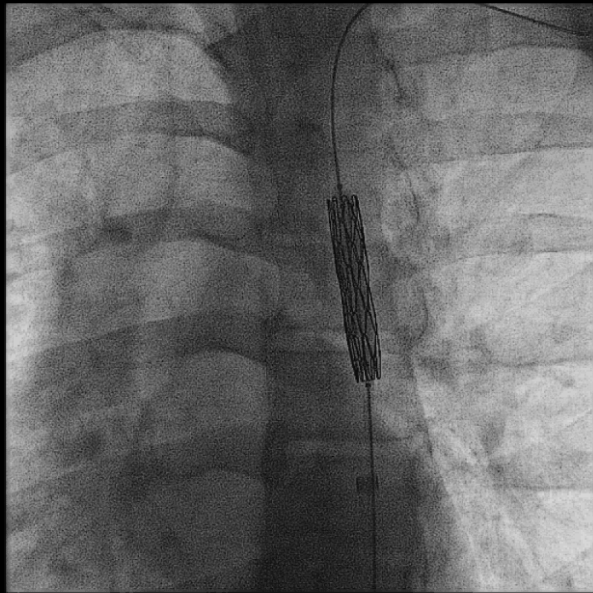
Lossy Compression - not intended for diagnosis



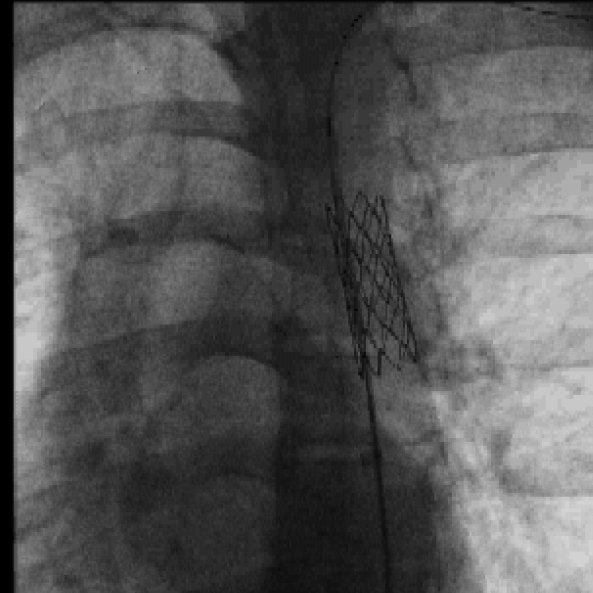
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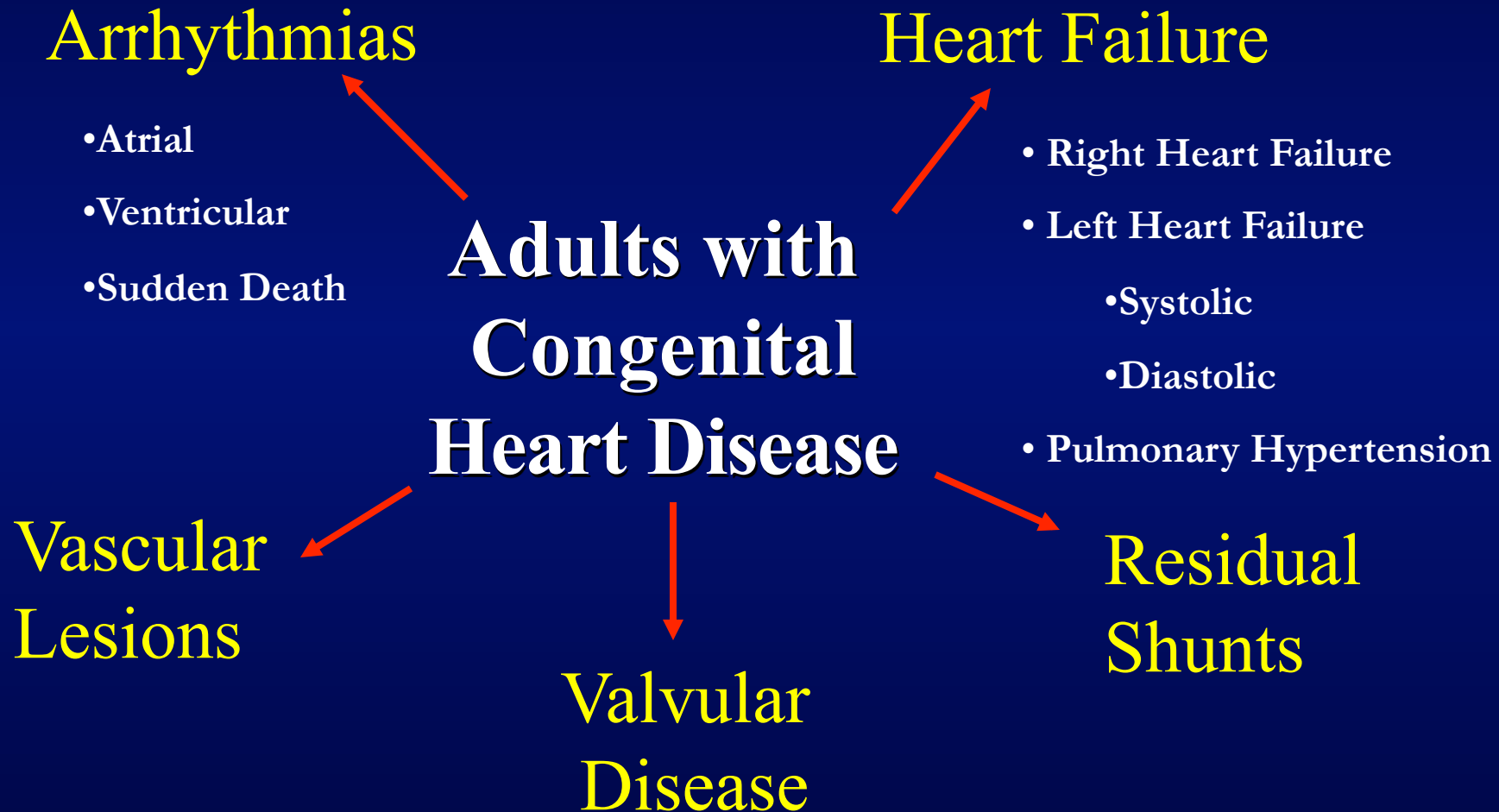
Lossy Compression - not intended for diagnosis



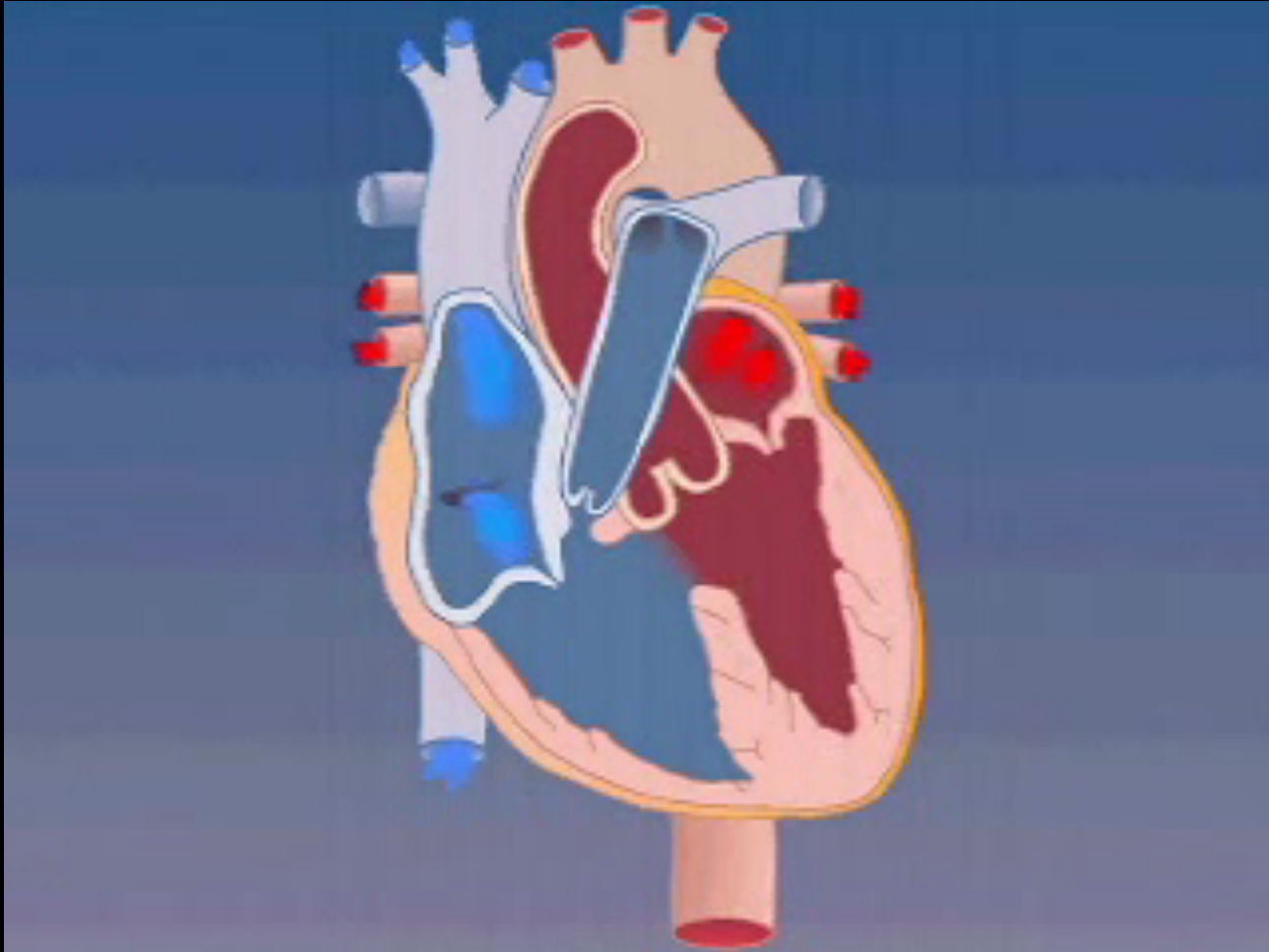
Lossy Compression - not intended for diagnosis



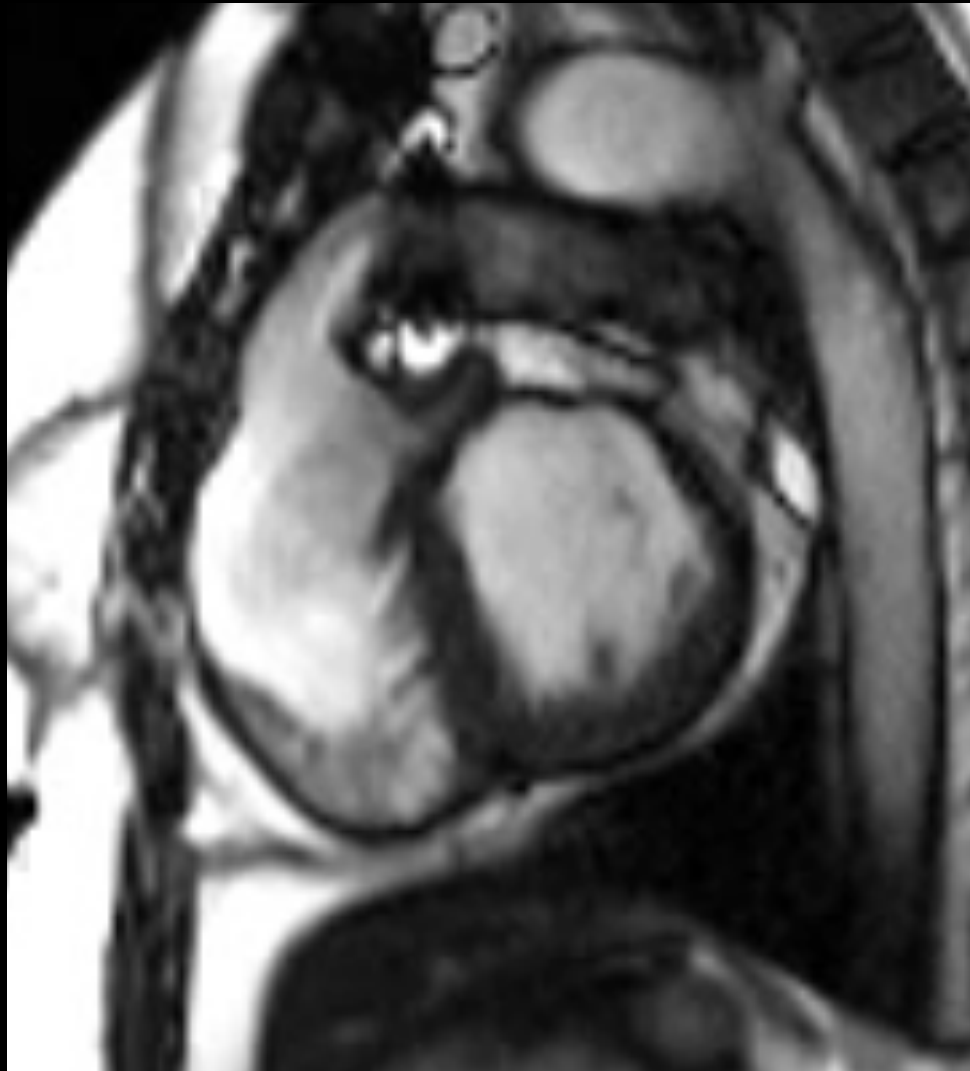
Long –Term Complications



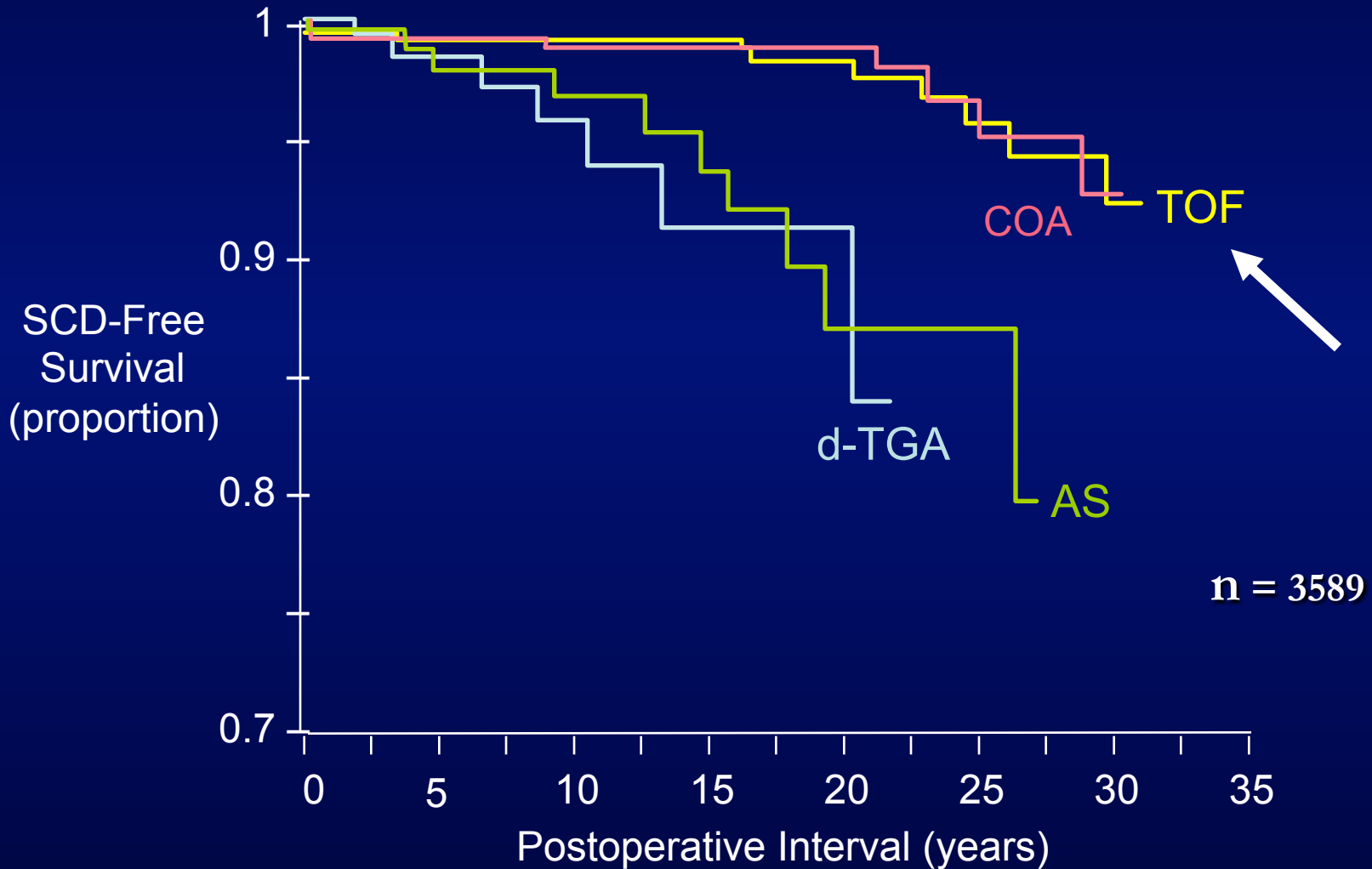
rTOF



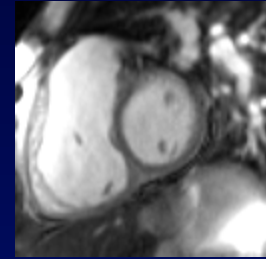
rTOF with Severe PI



Actuarial Probability of SCD-Free Survival After Surgical Treatment

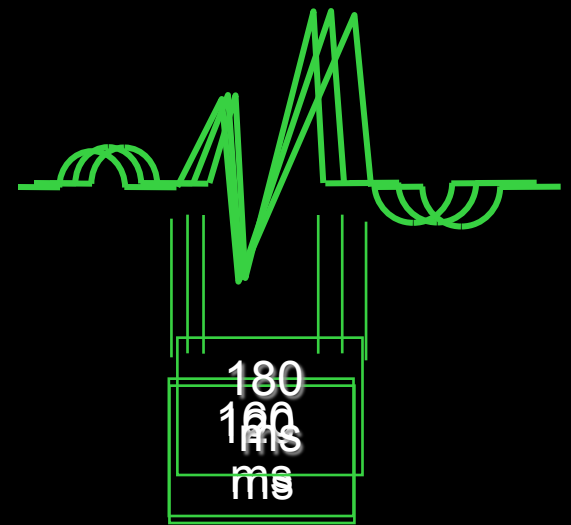
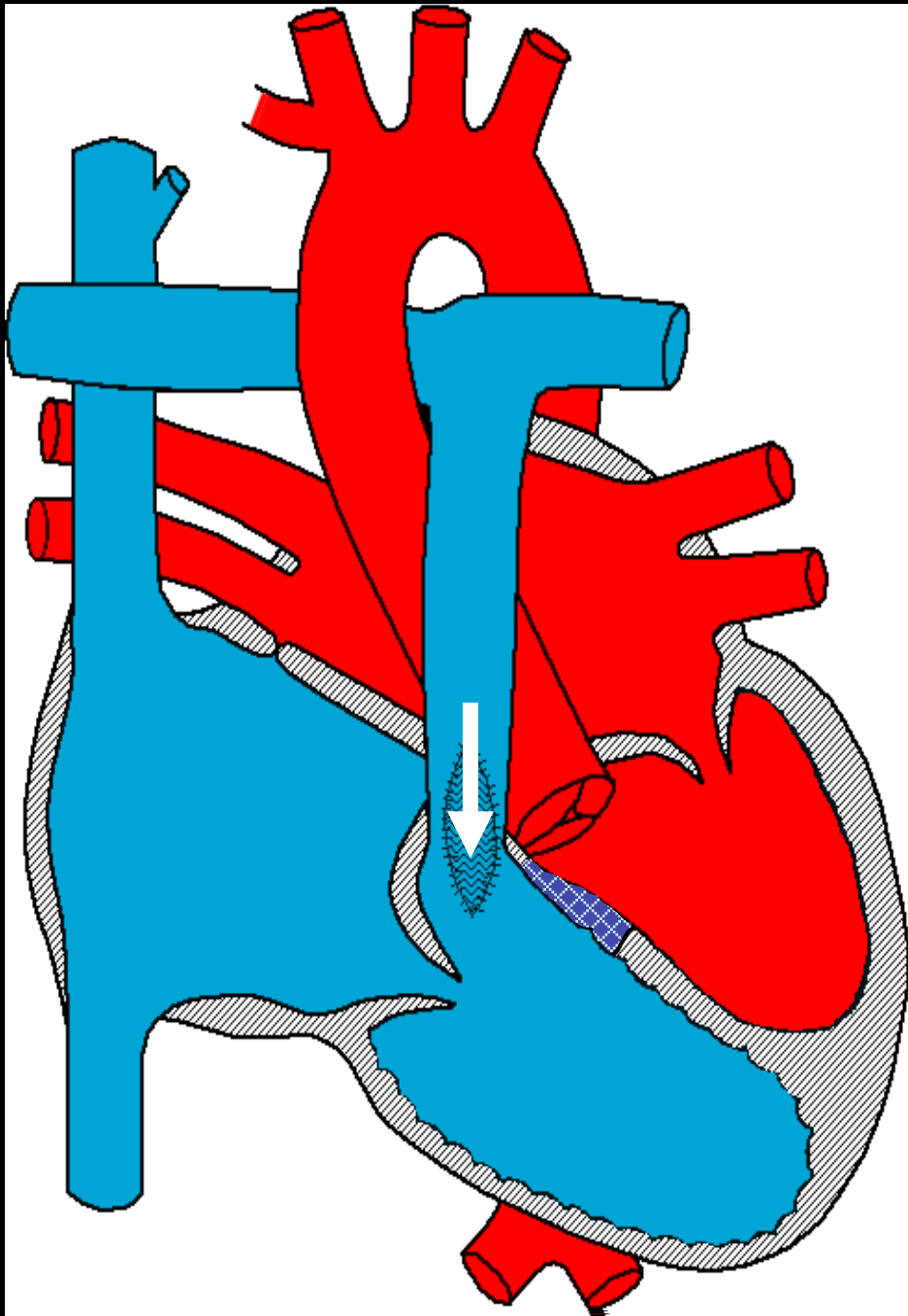


rTOF

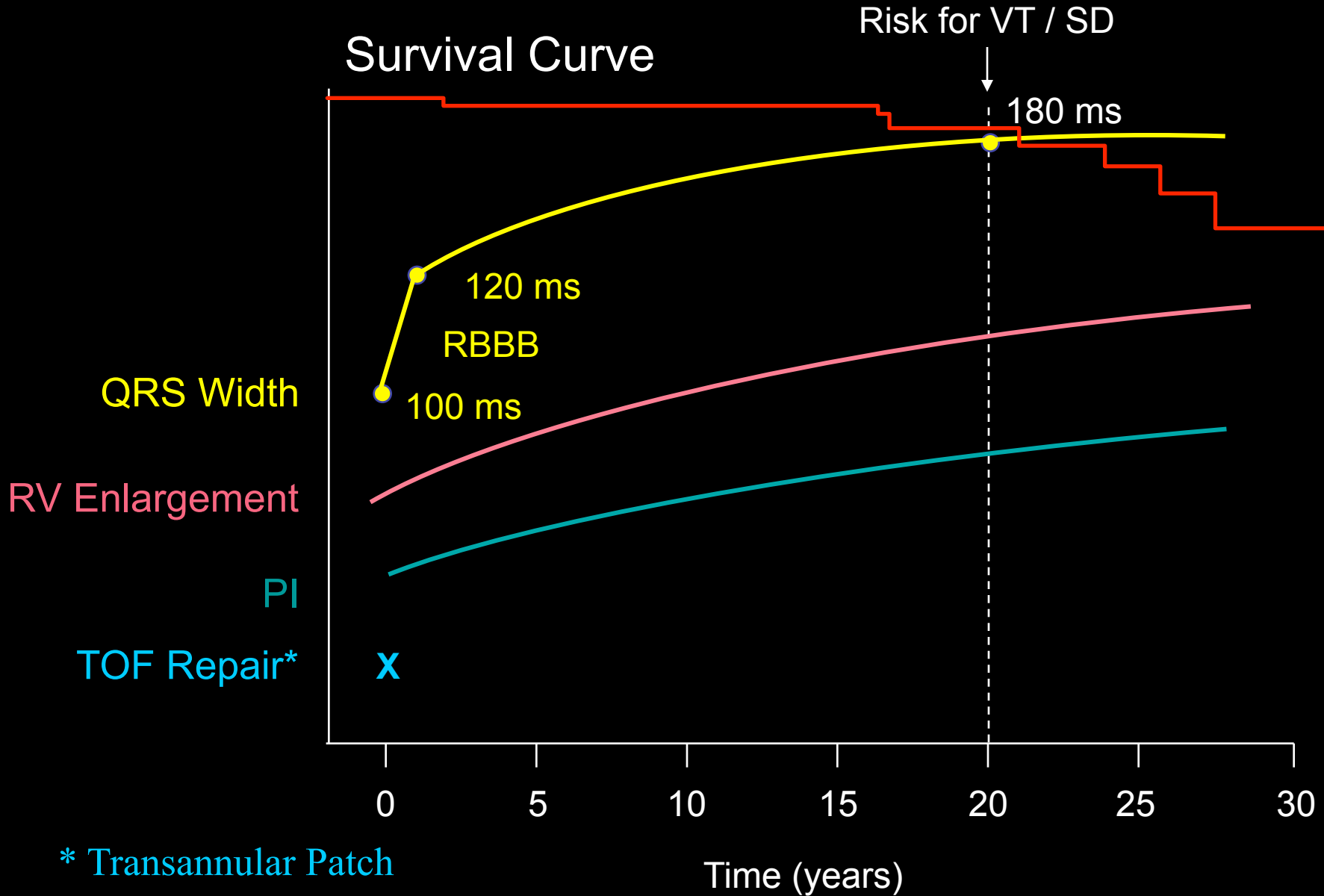


Risk for SCD for Patients

WHY?



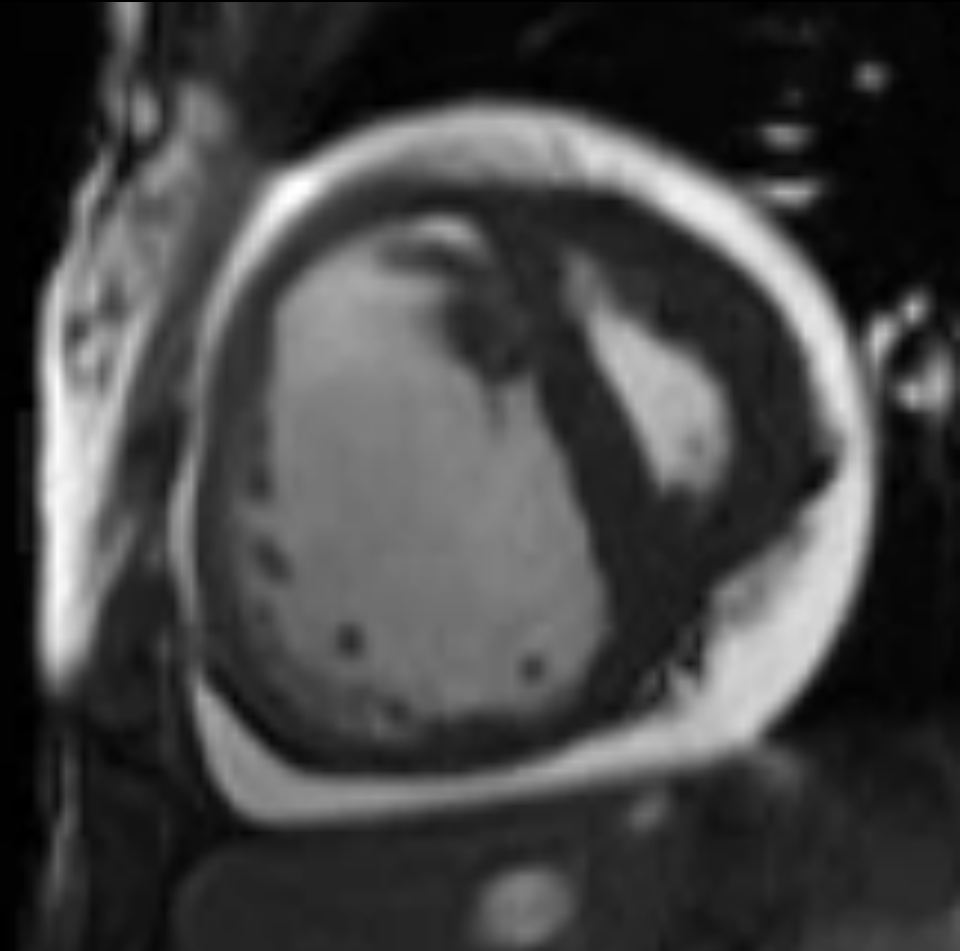
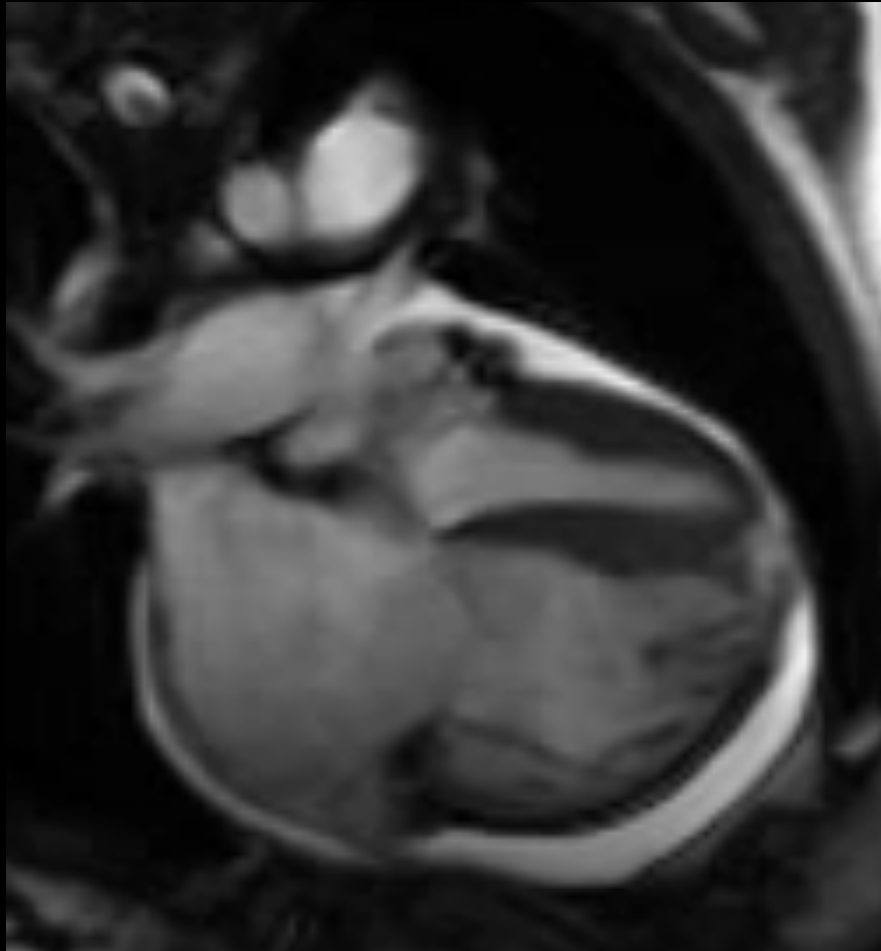
Survival Curve



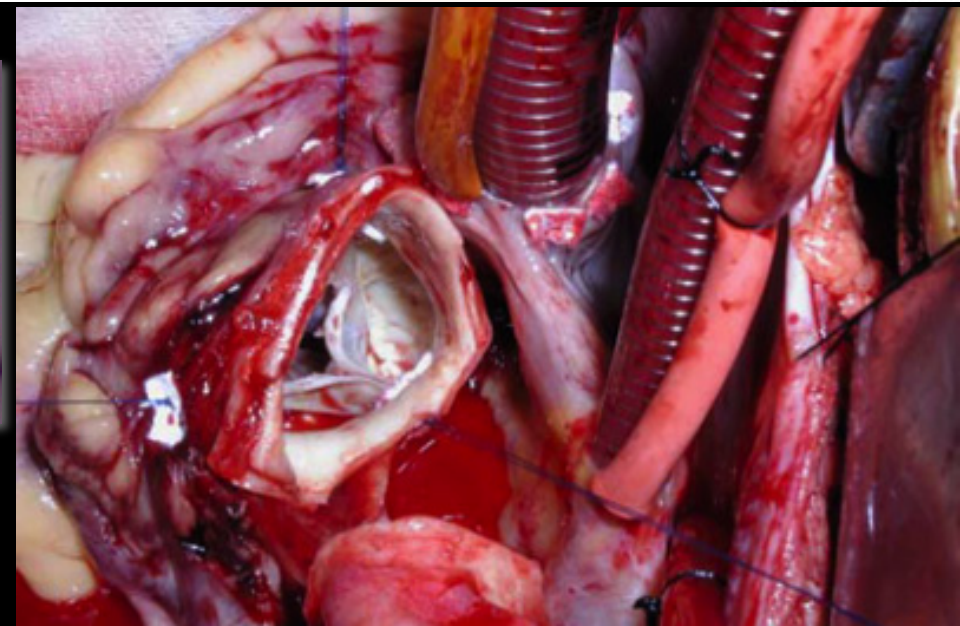
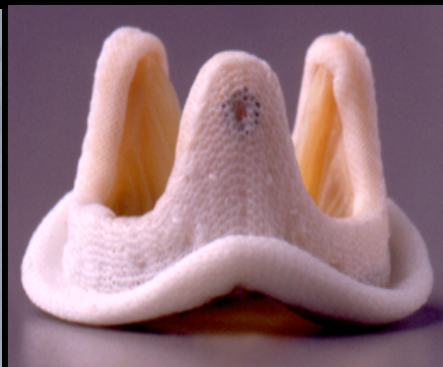
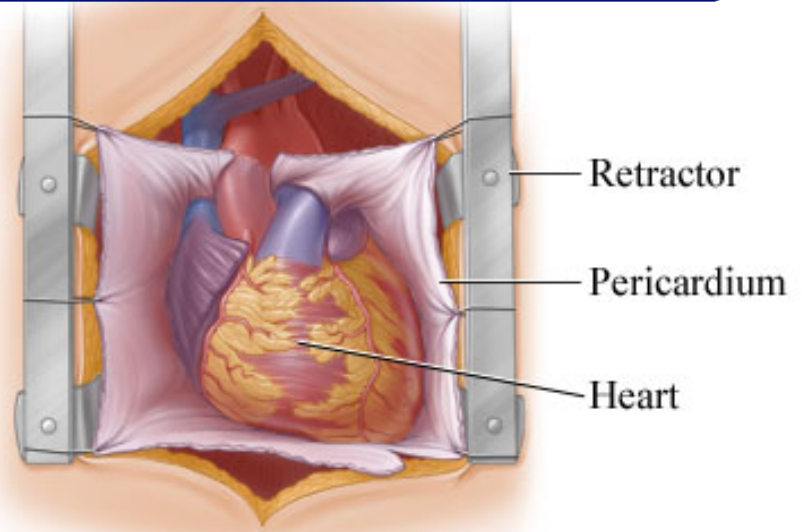
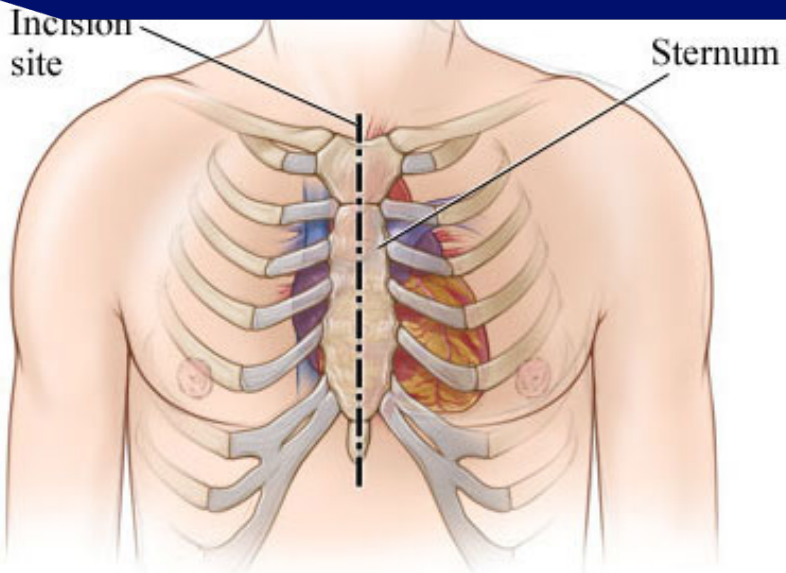
* Transannular Patch

26 yo with rTOF, DOE, Palpitations

Severe PI RF 45 %, RVEF 15 %



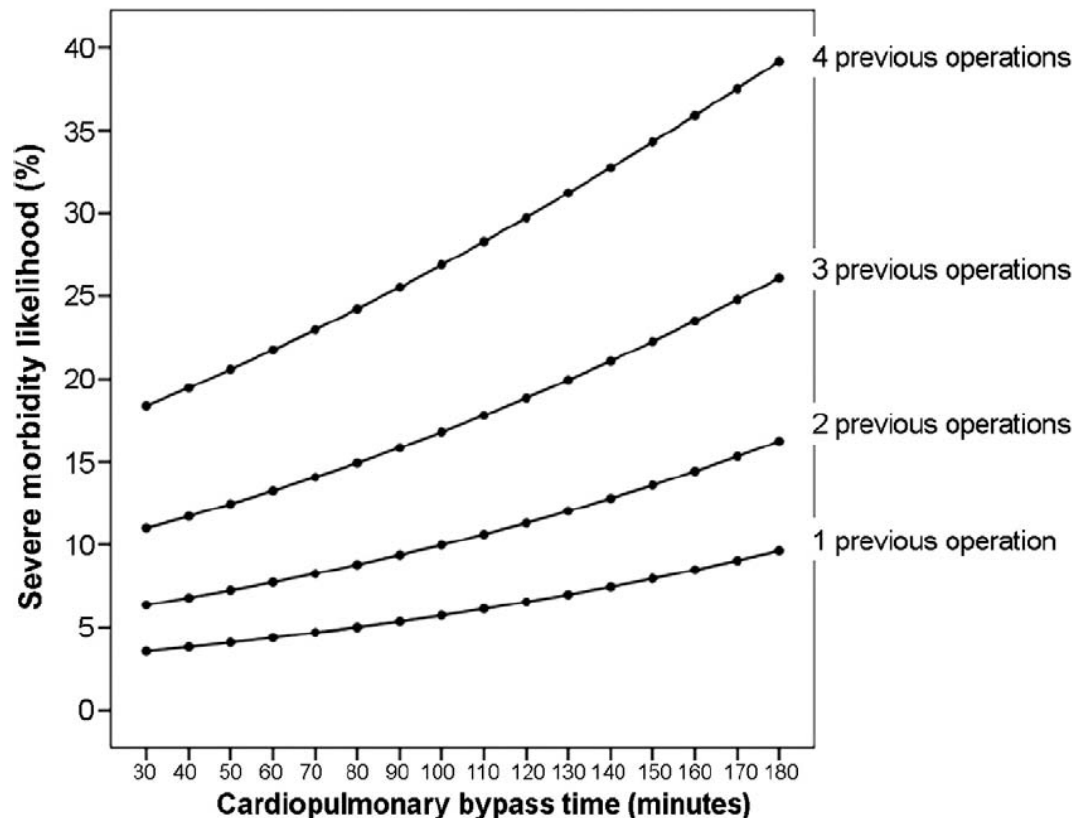
OPEN HEART SURGERY



Morbidity and Mortality Risk Factors in Adults With Congenital Heart Disease Undergoing Cardiac Reoperations

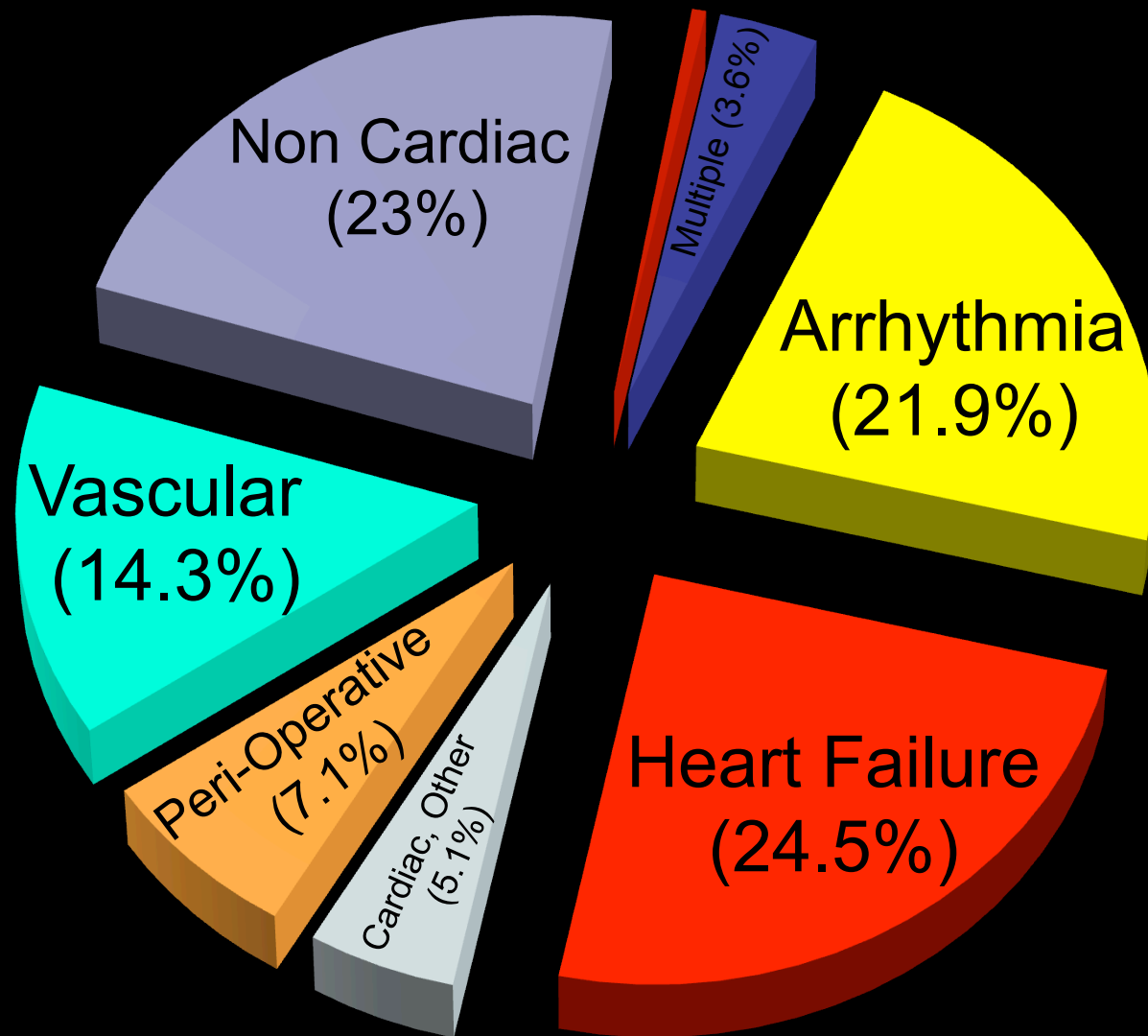
Alessandro Giamberti, MD, Massimo Chessa, MD, PhD, Raul Abella, MD, Gianfranco Butera, MD, Concetta Carlucci, MD, Halkawt Nuri, MD, Alessandro Frigiola, MD, and Marco Ranucci, MD

Department of Cardiac Surgery and Grown Up Congenital Heart Unit and Department of Cardiothoracic-Vascular Anesthesia and Intensive Care Unit, Istituto di Ricovero e Cura a Carattere Scientifico, Policlinico San Donato, San Donato Milanese, Milan, Italy



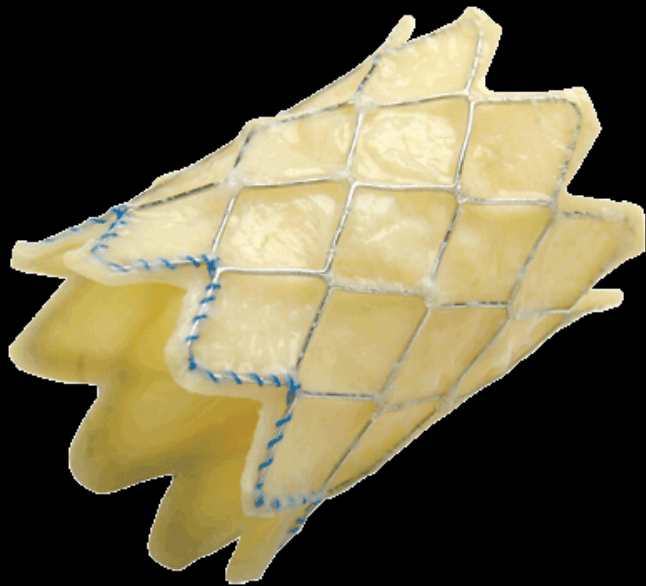
- 165 ACHD pts
- Morbidity/Mortality
- Severe Morbidity
 - Re-explore
 - Sternal wound infection
 - CVA
 - ARF
 - Prolonged Vent

Cause of ACHD Mortality

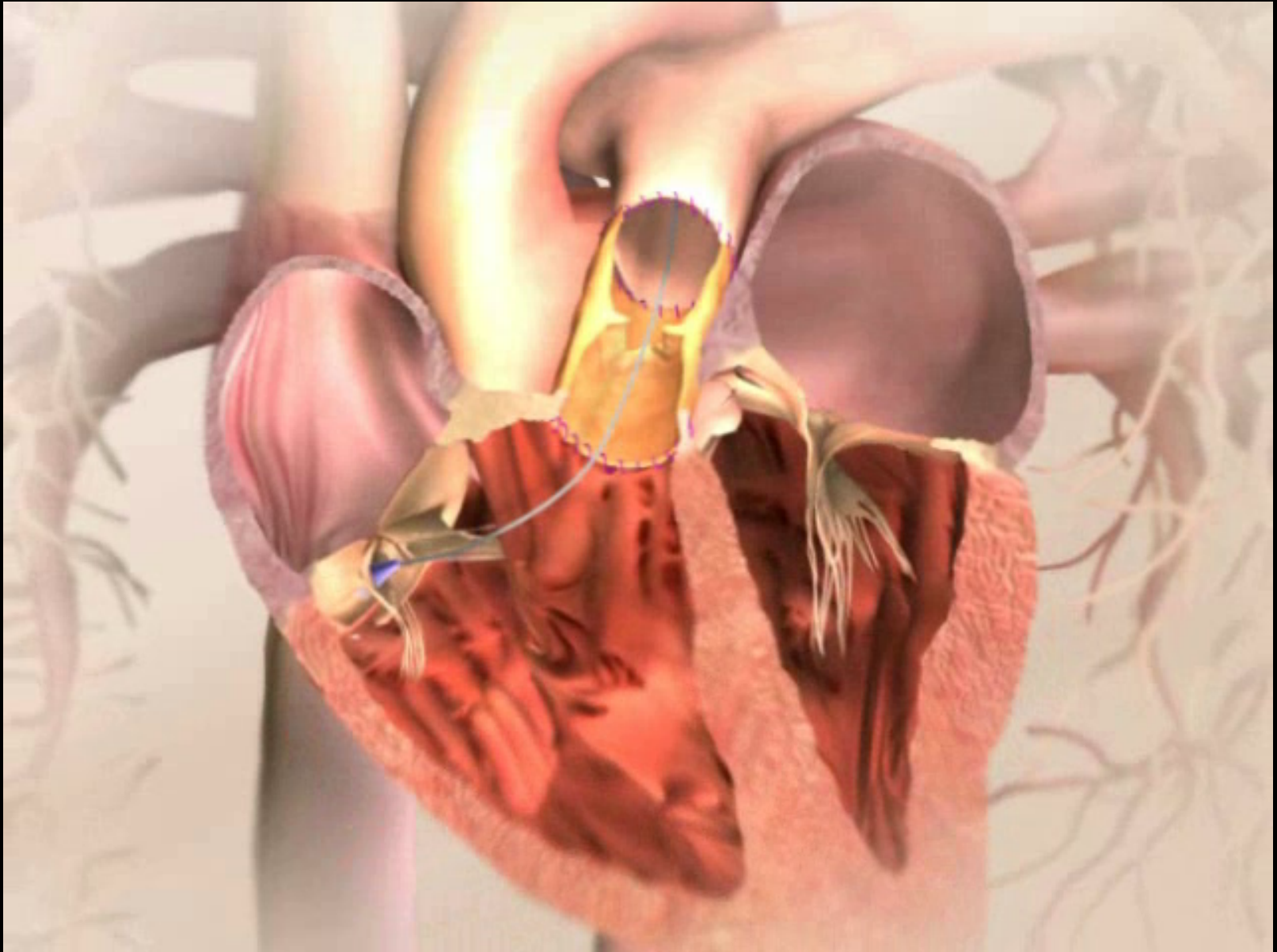


Melody Valve

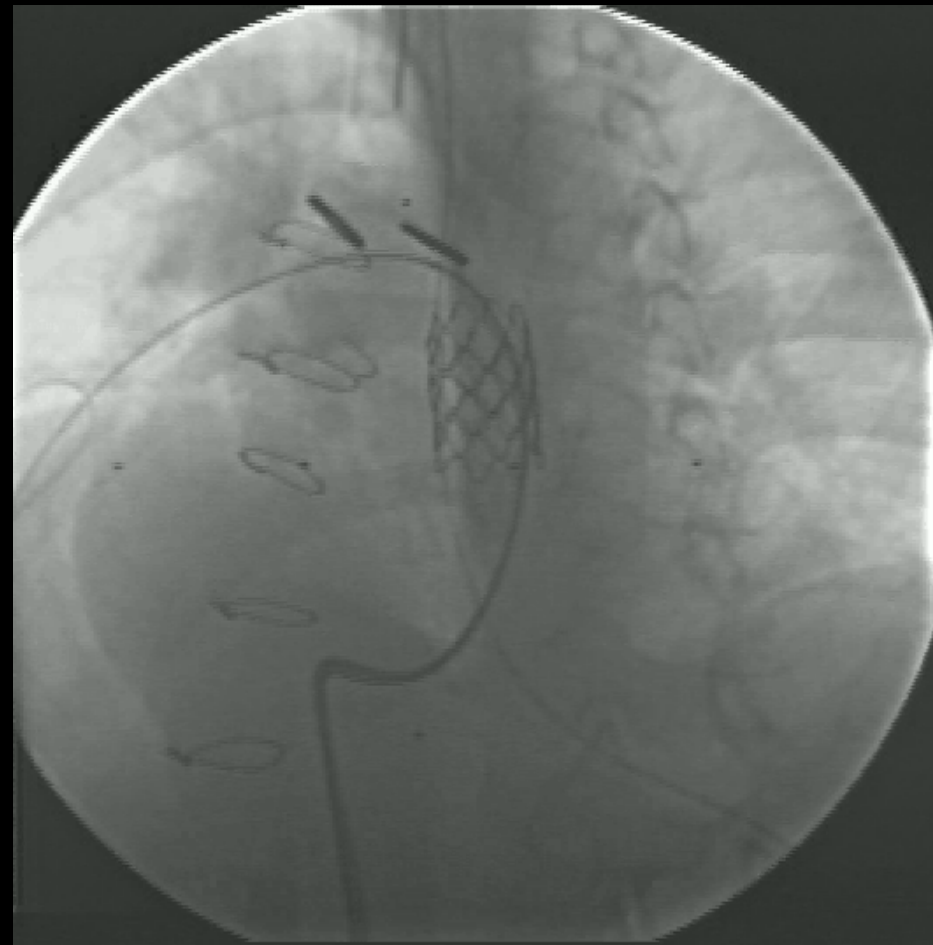
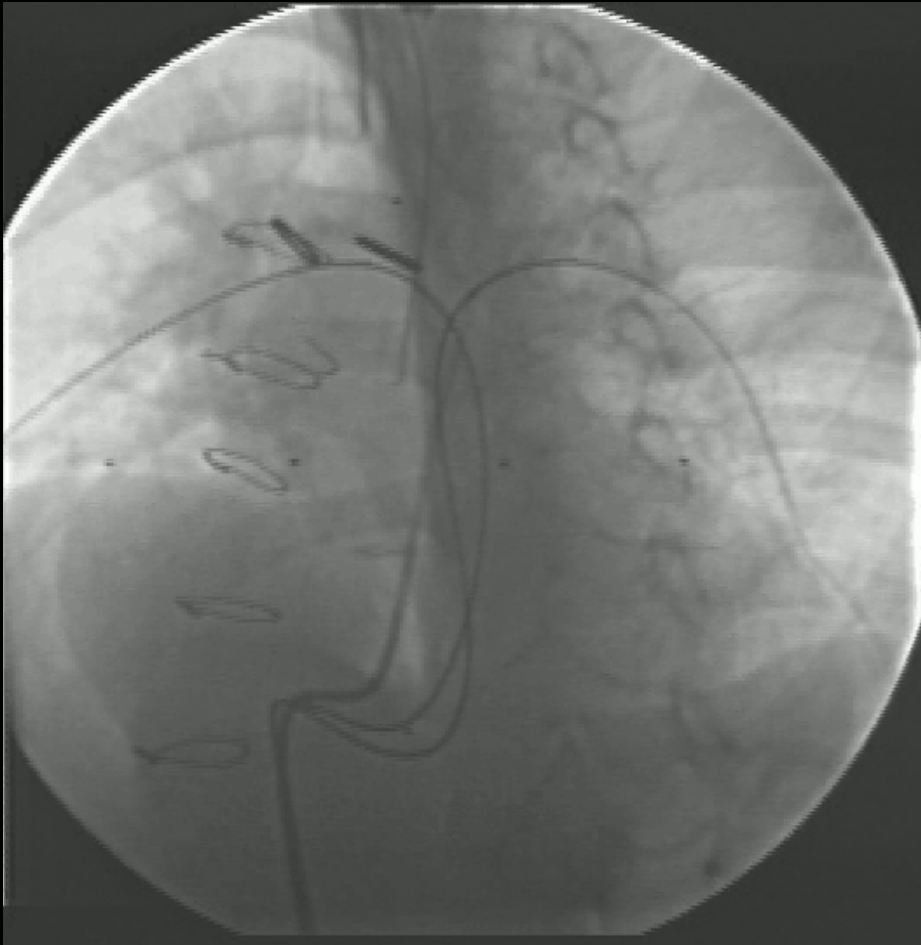
- Bovine jugular venous valve segment
- Platinum-Iridium stent



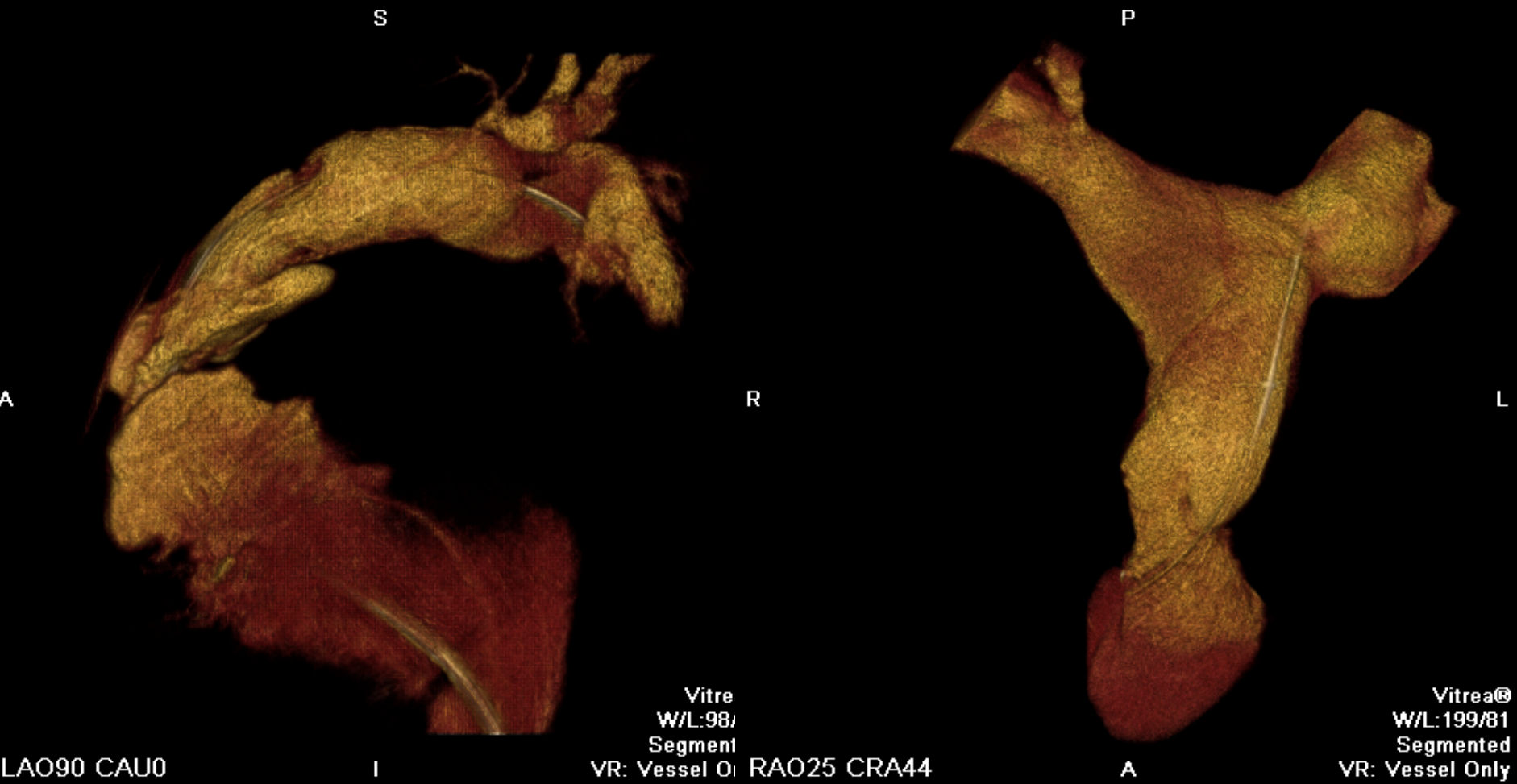
Percutaneous Pulmonary Valve Replacement



8 Zig- 34 mm Melody for PI



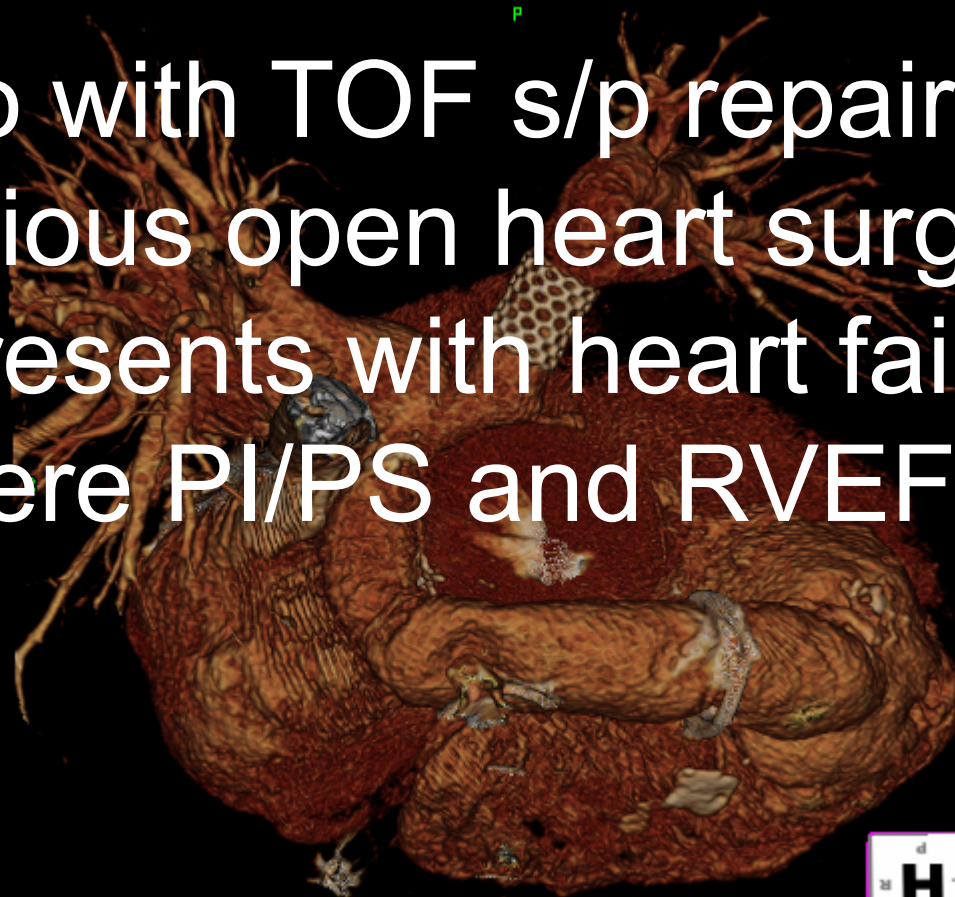
TOF with Native RVOT Morphologic Variations



36 yo with TOF s/p repair with 4
previous open heart surgeries.

Presents with heart failure

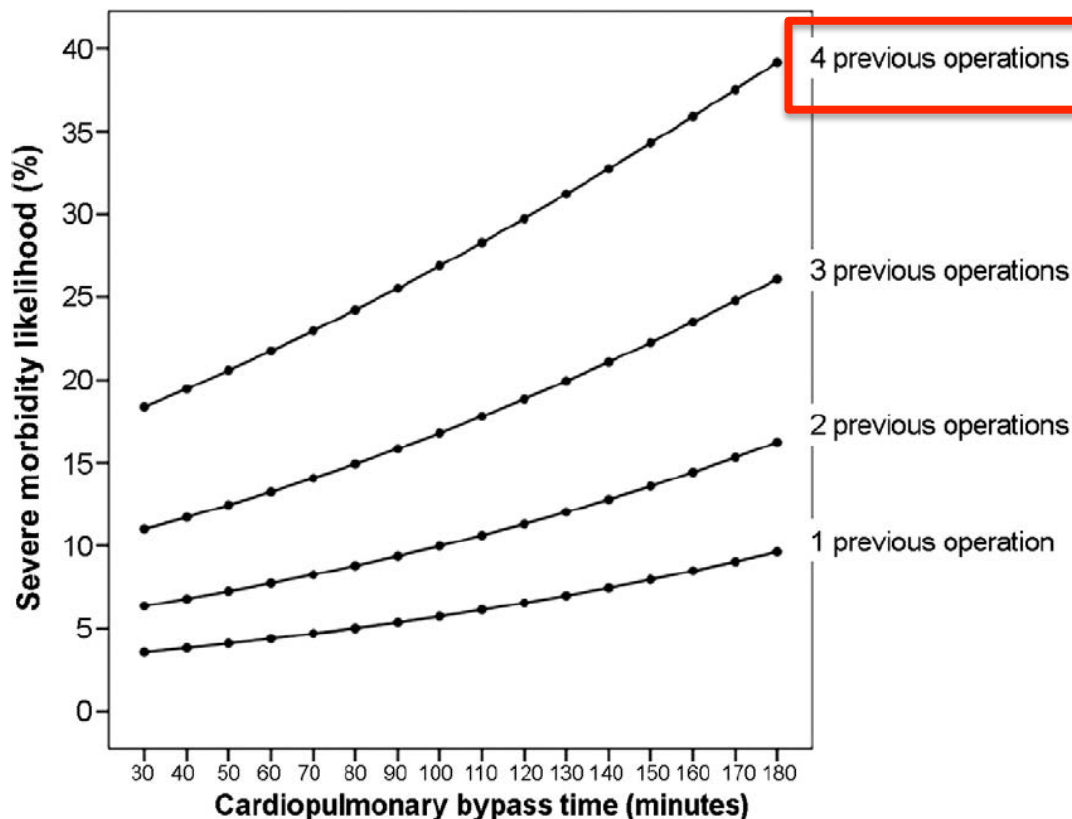
Severe PI/PS and RVEF 12 %



Morbidity and Mortality Risk Factors in Adults With Congenital Heart Disease Undergoing Cardiac Reoperations

Alessandro Giamberti, MD, Massimo Chessa, MD, PhD, Raul Abella, MD, Gianfranco Butera, MD, Concetta Carlucci, MD, Halkawt Nuri, MD, Alessandro Frigiola, MD, and Marco Ranucci, MD

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- 165 ACHD pts
- Morbidity/Mortality
- Severe Morbidity
 - Re-explore
 - Sternal wound infection
 - CVA
 - ARF
 - Prolonged Vent

The Future of ACHD Transcatheter and Surgical Interventions

Interventionalist

CT Surgeon

HYBRID

The Future of ACHD Transcatheter and Surgical Interventions: HYBRID

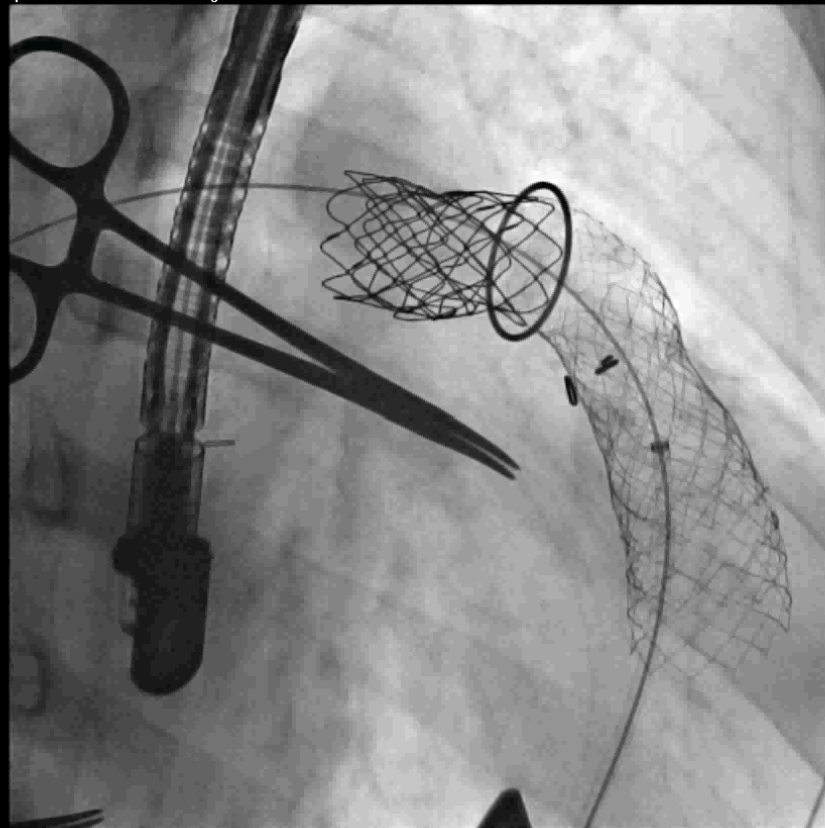
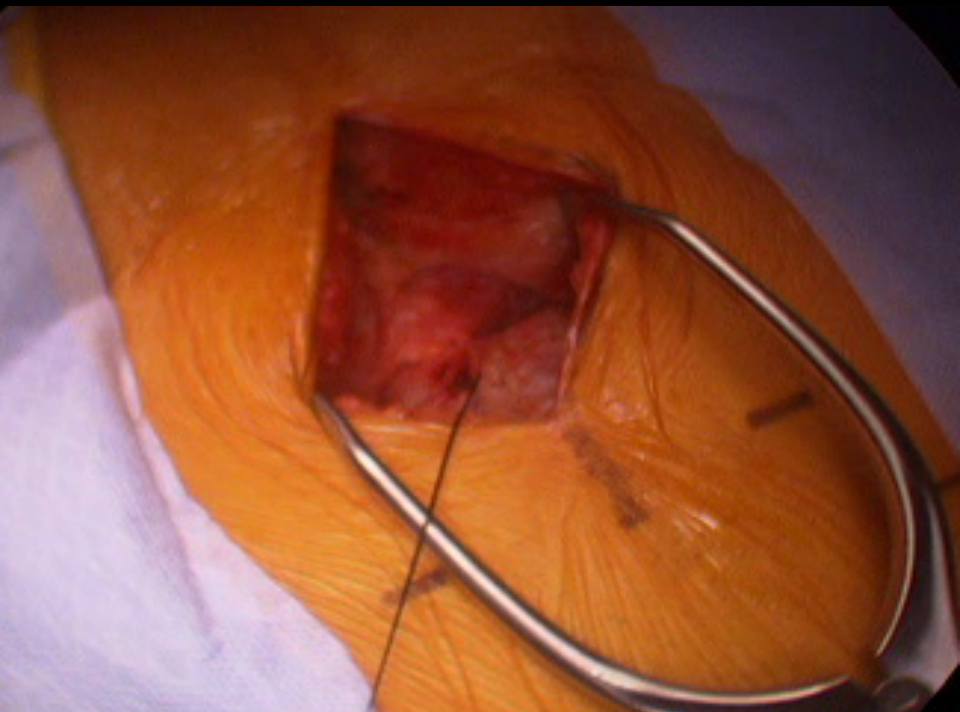
Interventionalist

Surgeon



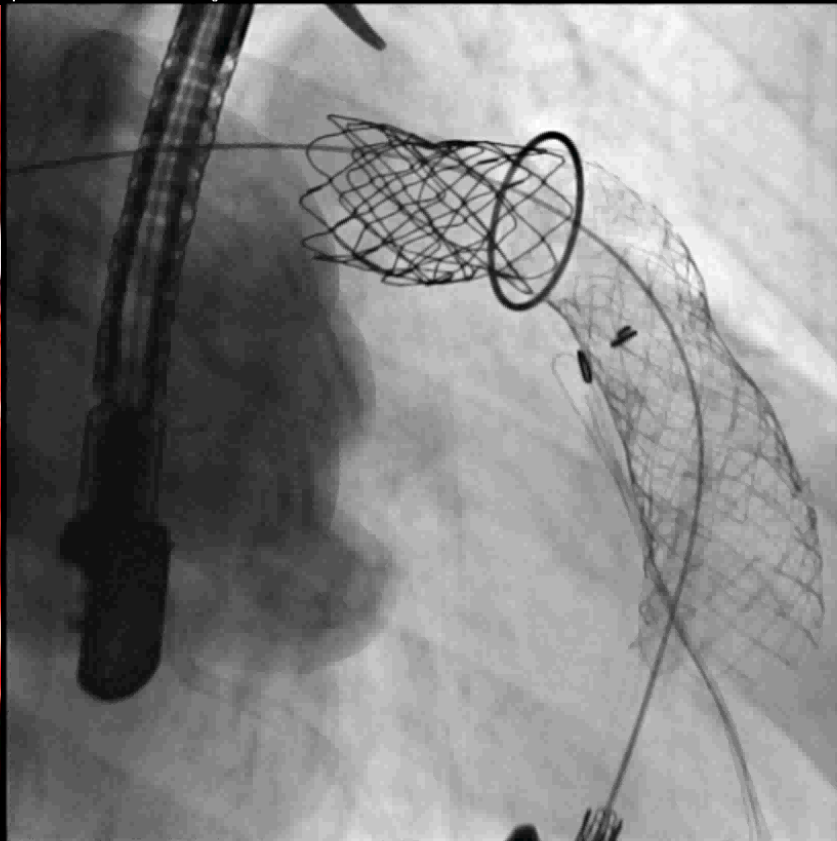
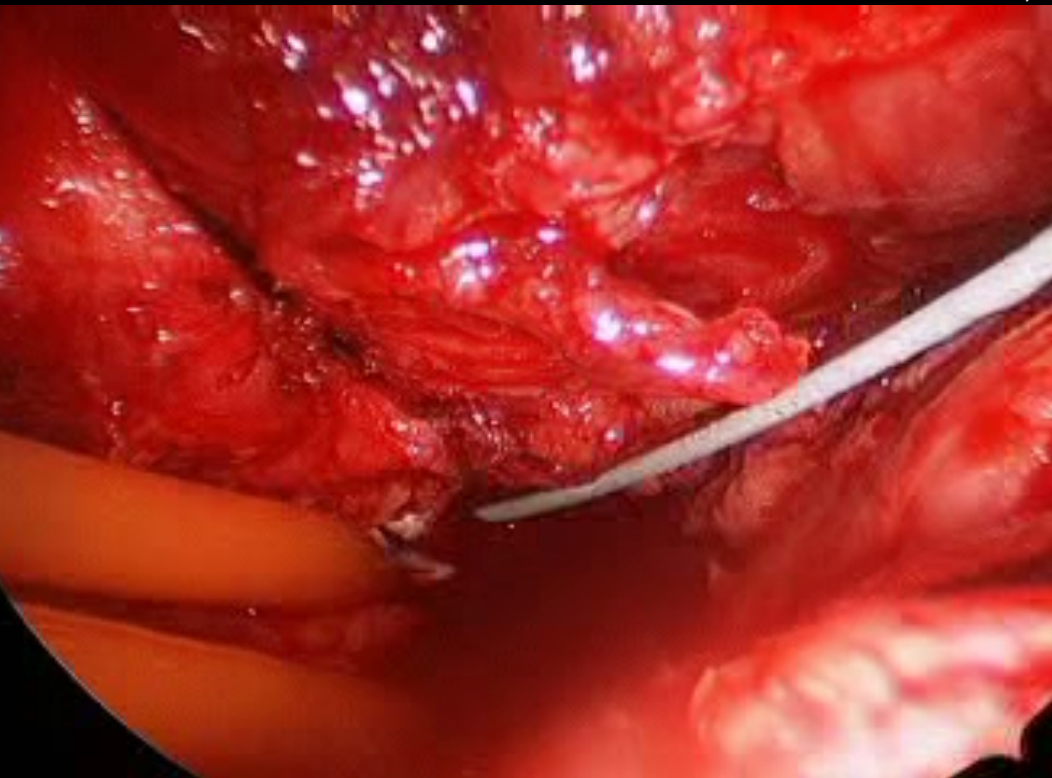
Hybrid Periventricular Melody TPV off CPB

Lossy Compression - not intended for diagnosis

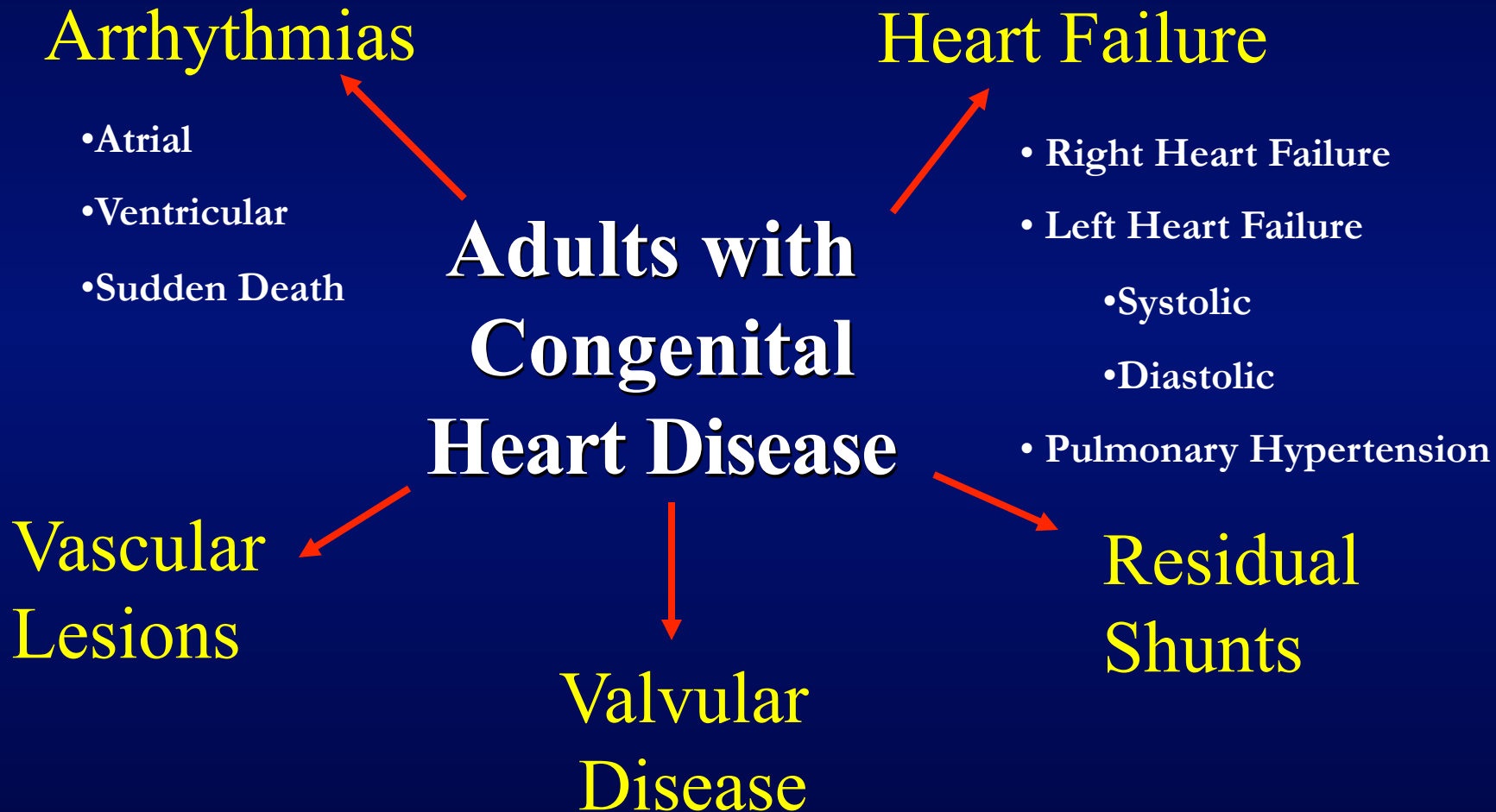


HYBRID Delivery Melody TPV

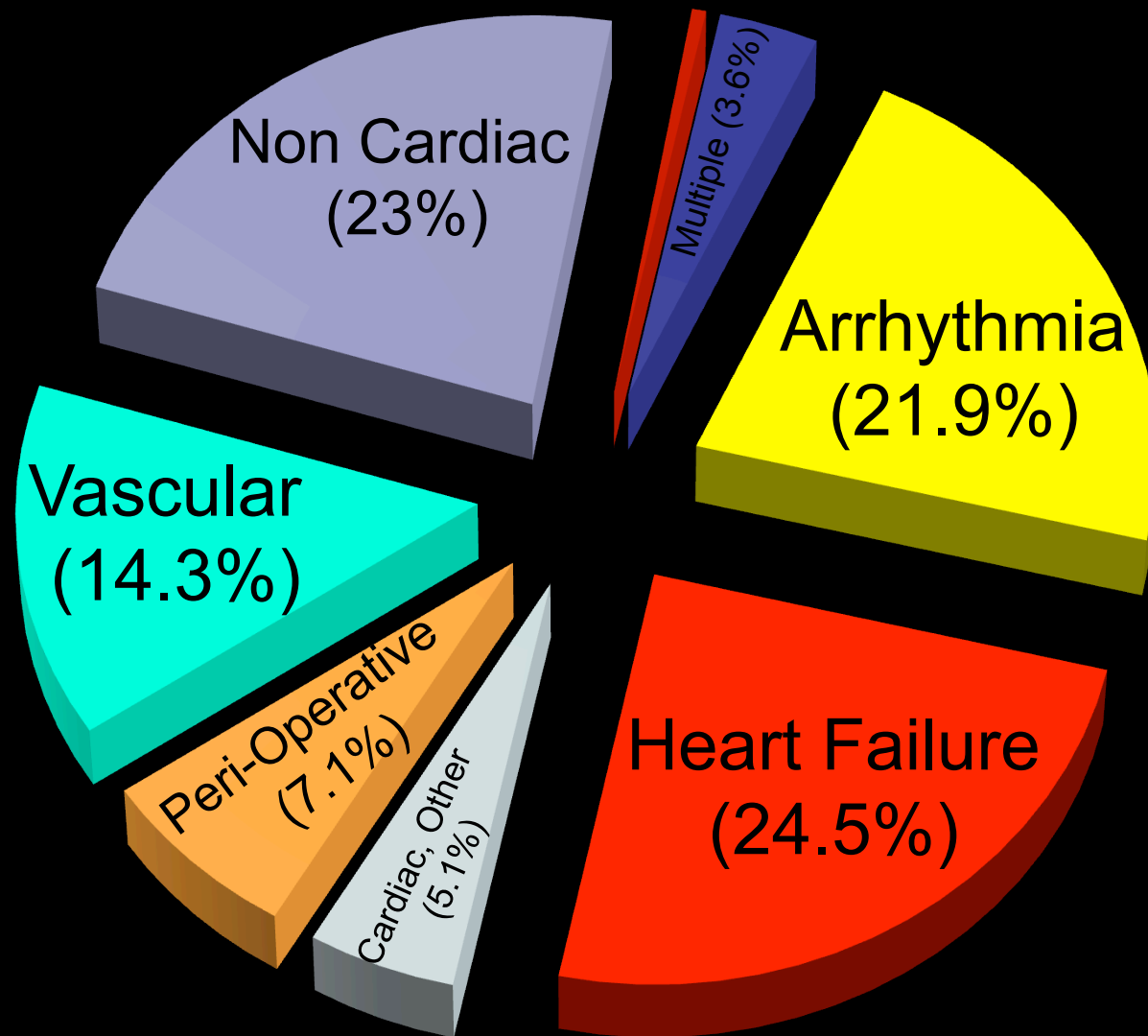
Lossy Compression - not intended for diagnosis



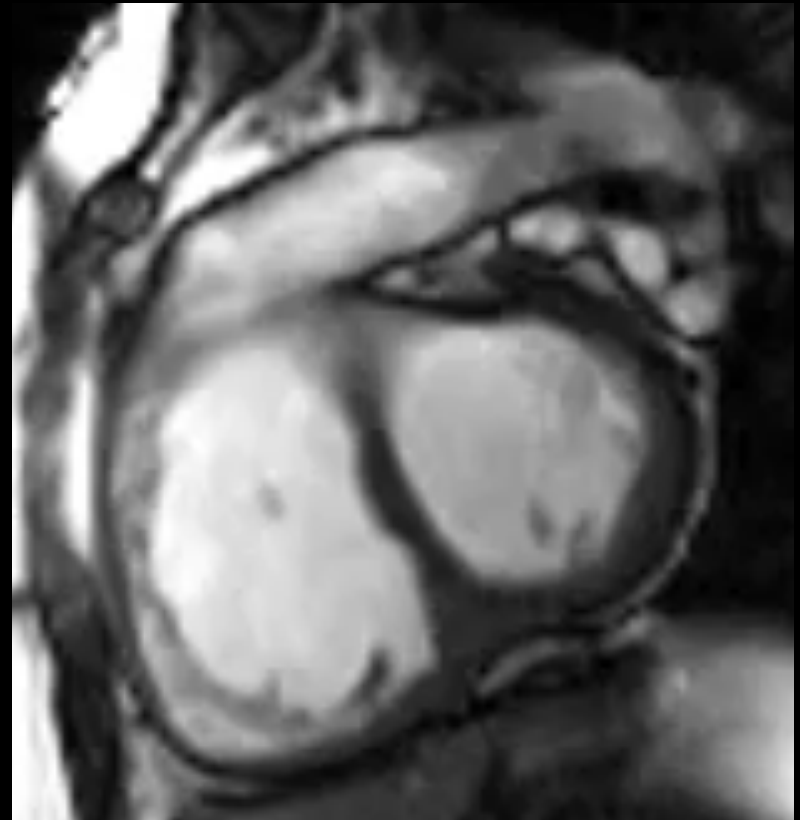
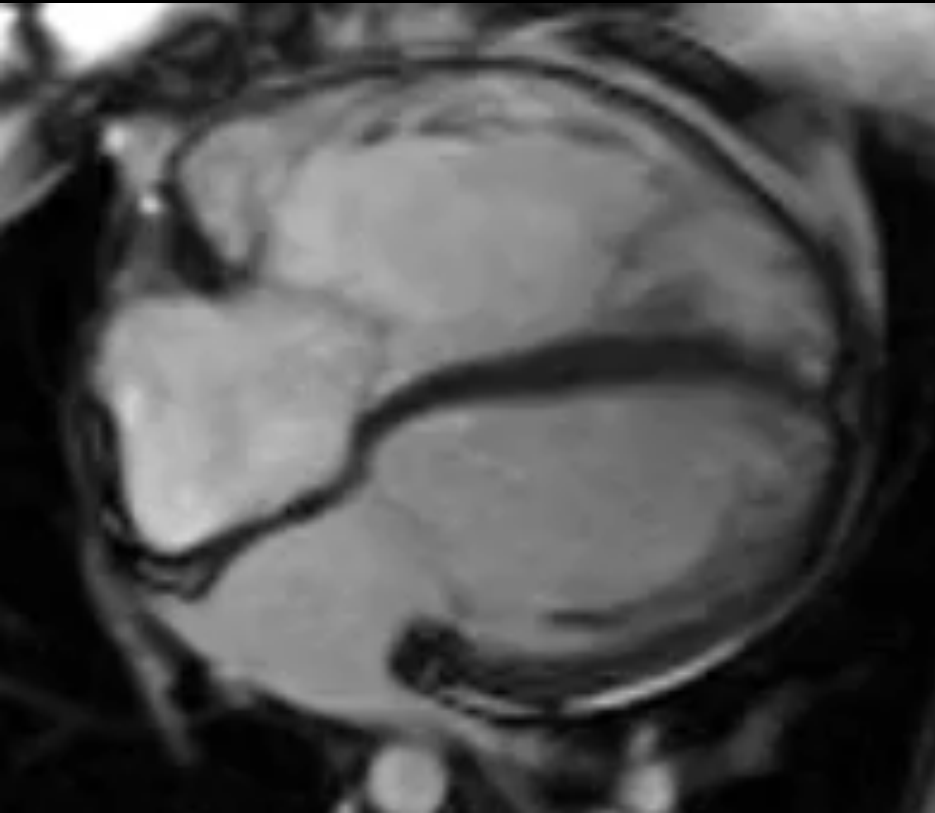
Long –Term Complications



Cause of ACHD Mortality

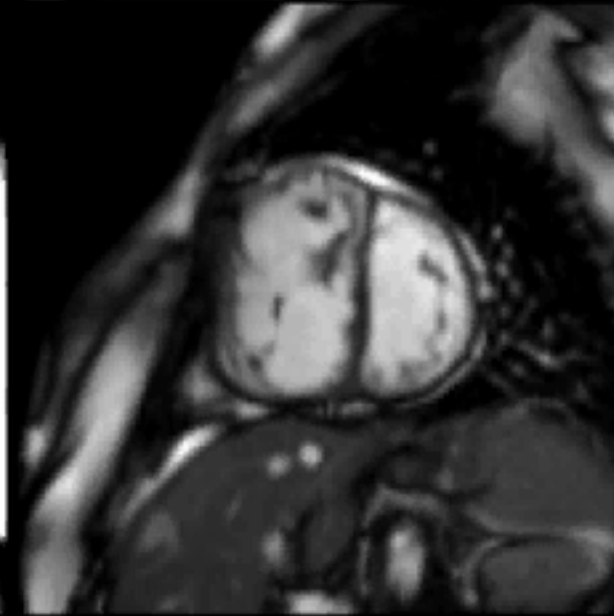
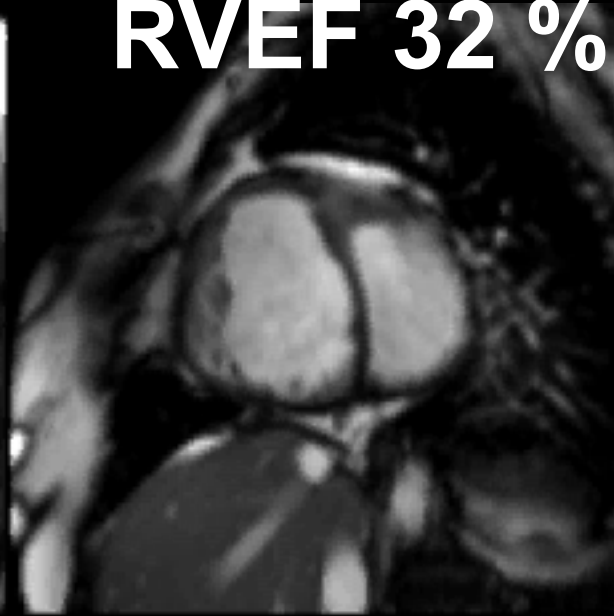


26 yo Repaired TOF, Severe PI, RVEF 22 %

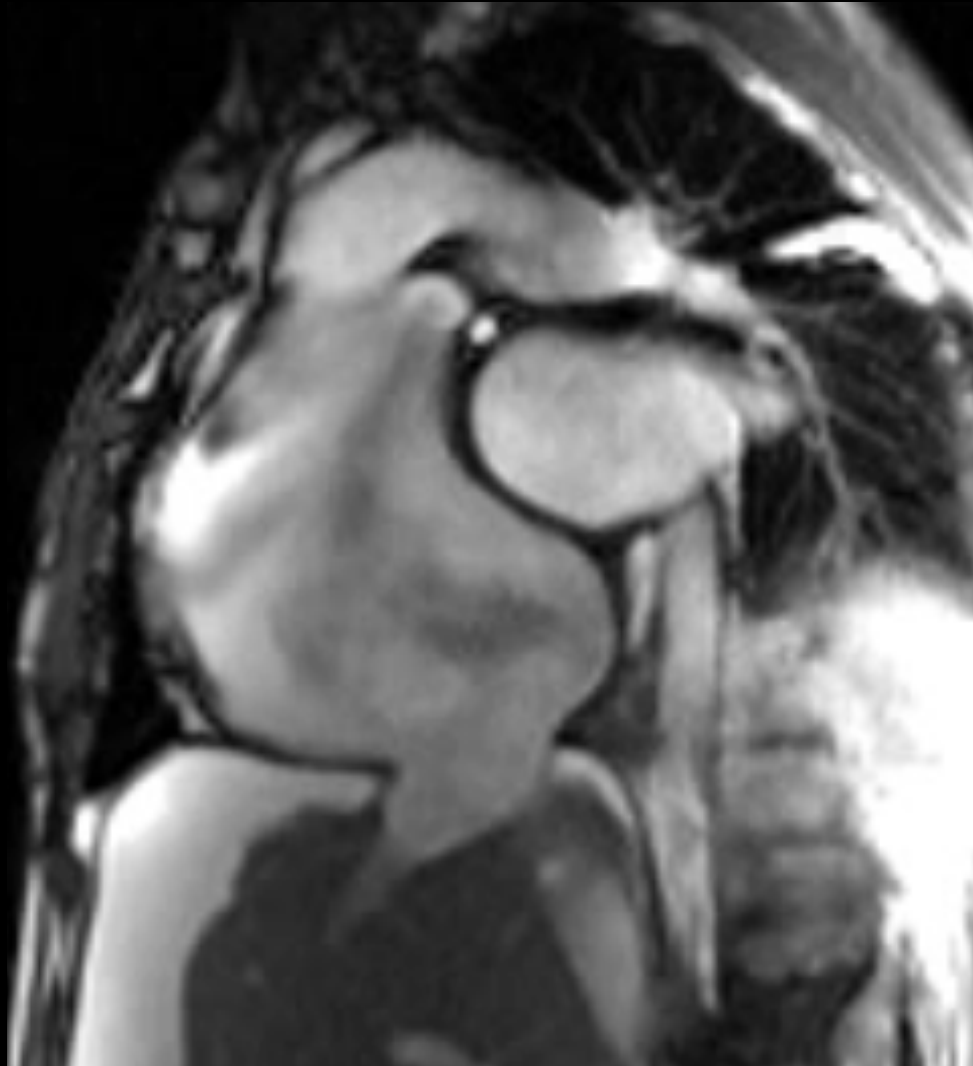


34 yo D-TGA/Atrial Switch

RVEF 32 %



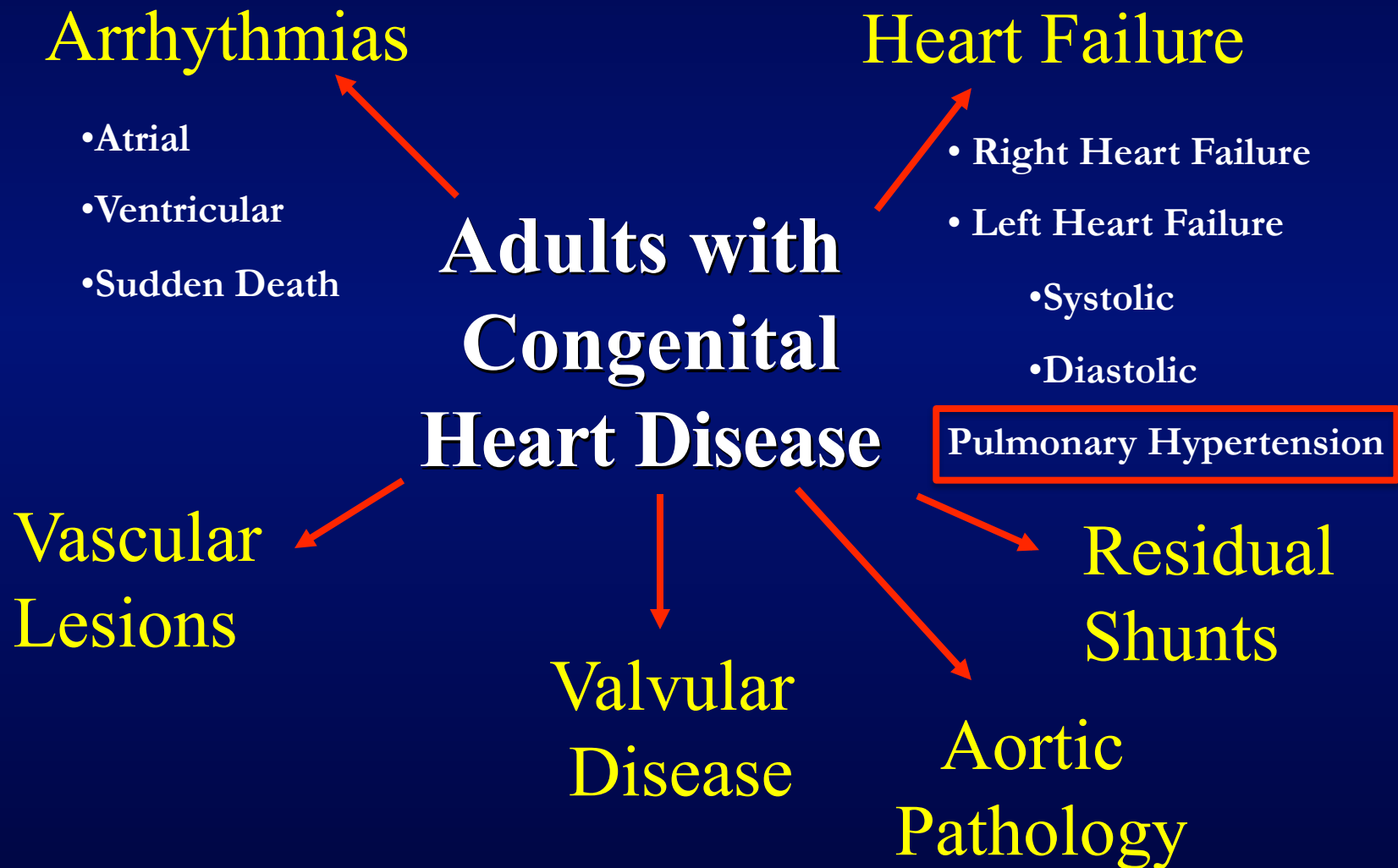
Single Ventricle Failing Fontan



ACHD – Heart Failure Trials

0

Long –Term Complications



46 yo with rTOD

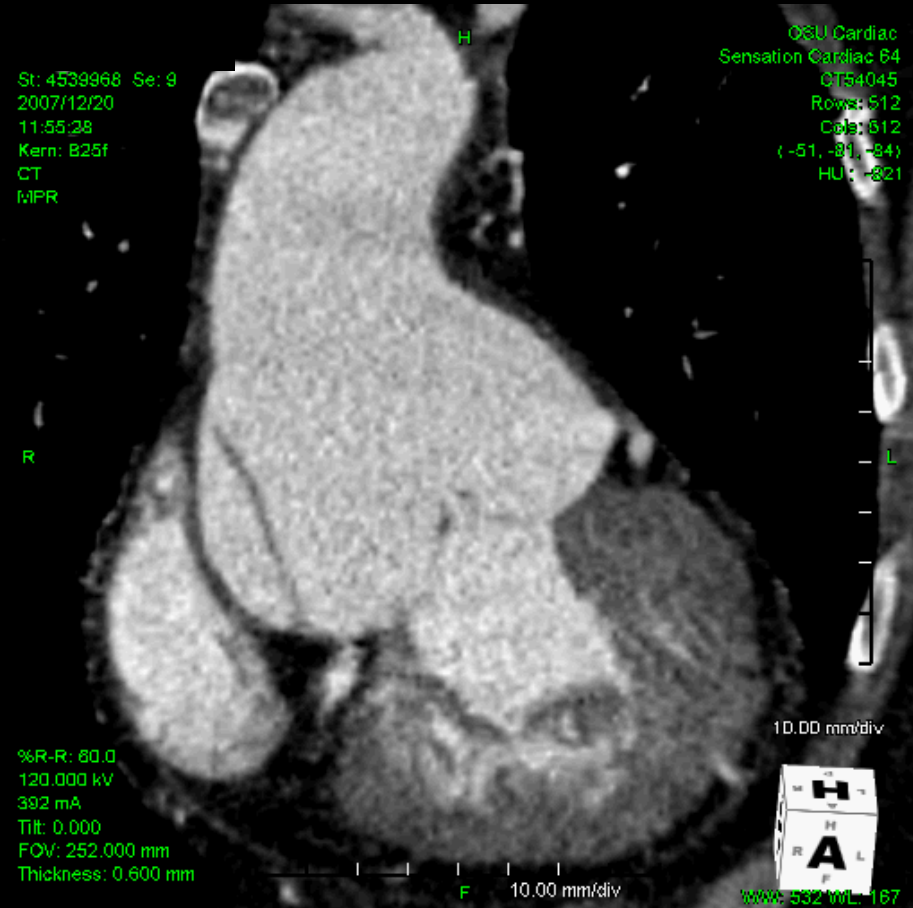
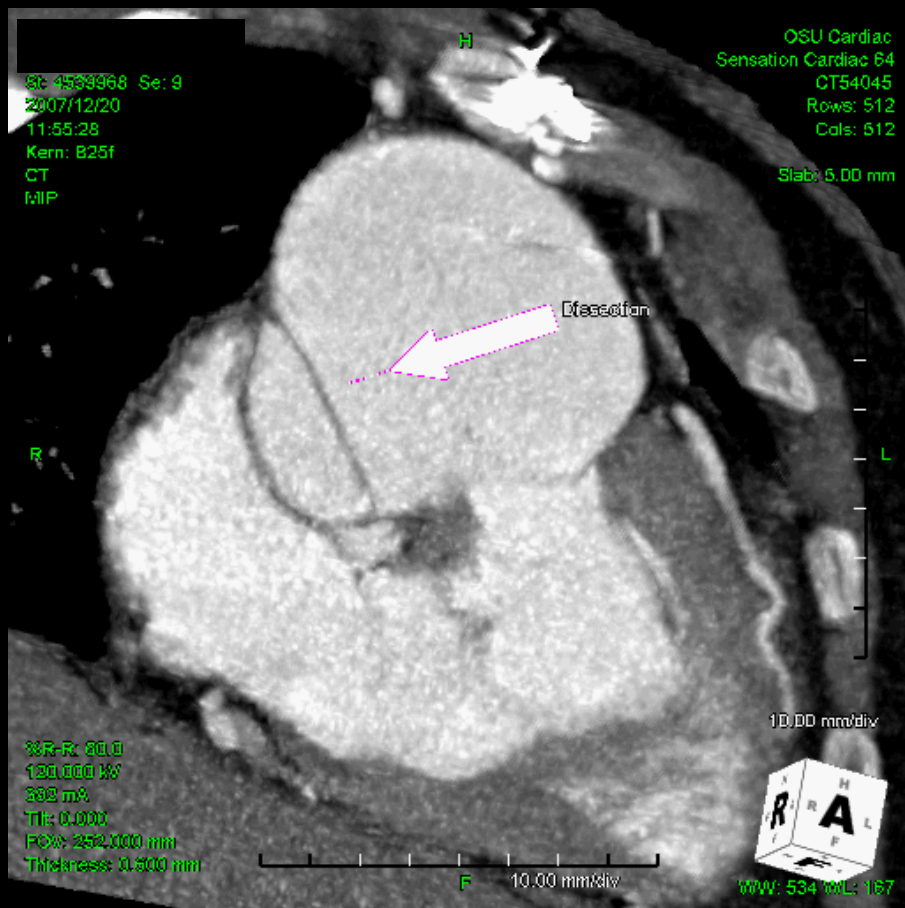
5.5 cm →



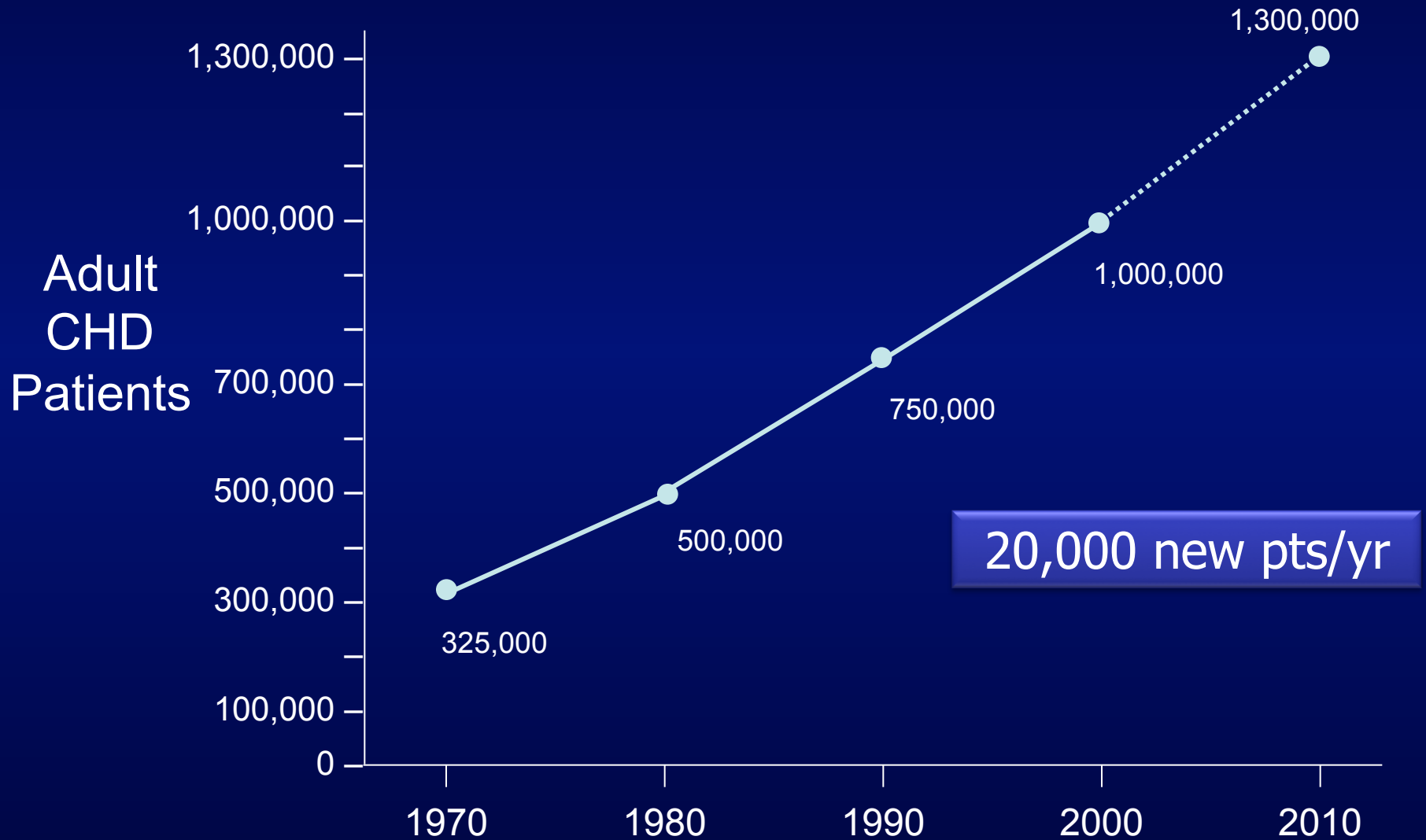
Aortic Dissection with rTOF



Single/Fontan and Aortic Dissection



Patients Reaching Adulthood with CHD



SOLUTION

Change The Outcome

WHO takes care of the patients

- Fall Between IM and Pediatric Cardiology Training
- ACHD Subspecialty Board Certification

**How Do We Change
The Outcome For
ACHD Patients**

ACC Revised Recommendations for Training in Adult Cardiovascular Medicine Core Cardiology Training II (COCATS 2)

(Revision of the 1995 COCATS Training Statement)

ease. The goal of Level 1 training is for all graduates to be able to recognize and evaluate common, simple congenital heart lesions and the sequelae of the more commonly repaired congenital heart defects. These graduates should always consider consultation and collaborative patient management with a Level 2— or 3—trained specialist or pediatric cardiologist when major management decisions are made for adults with congenital heart disease and for periodic discussions of ongoing care.

We suggest that at least **6 hours of formal lectures** within the core curriculum of the training program be devoted to congenital heart disease in adults. Table 1 indicates the content suggested for these 6 hours, covering key basic and clinical aspects of these disorders.

- No requirement or training for direct ACHD patient care
- =
- No requirement to adequately perform or interpret diagnostic studies in ACHD

ACHD Subspecialty Certification



ABIM

ABP



ACC

**Petition for ACHD Subspecialty Certification
American Board of Internal Medicine Pathway**

Based on ABIM Criteria for Recognition as Subspecialty
Certification

**Michael J. Landzberg, MD and Curt Daniels, MD
for the ABIM Petition Working Group**

Member	Representing
Michael Landzberg, MD, FACC, Chair	ISACHD
Curt Daniels, MD, FACC, Co-Chair	ABP/ABIM
Elyse Foster, MD, FACC	AHA
Thomas Graham, MD, FACC	ABP
Gerard Martin, MD, FACC	ACC
Stephanie Mitchell	ACC
Amy Verstappen	ACHA
Carole Warnes, MD, FACC	ACC
Gary Webb, MD, FACC	ACC/ACHA

Petition for ACHD subspecialty certification – American Board of Pediatrics

Based on ABP GUIDELINES FOR ESTABLISHING A NEW SUBSPECIALTY

ABP Petition Writing Group

Member

Representing

Thomas Graham, MD, FACC

ACC

Curt Daniels, MD, FACC

ACC

Robert Beekman, MD, FACC

AAP/JCCHD

Michelle Gurvitz, MD, FACC

ACC

Gerard Martin, MD, FACC

ACC/JCCHD

Allison Knauth, MD, FACC

AHA

Catherine Webb, MD, FACC

JCCHD

David Sahn, MD, FACC

CHF

ACHD Subspecialty Certification Timeline



12/09 ABP Presentation

- Agree with petition
- No major issues
- Await ABIM

2/10 ABIM Response

- Meets criteria
- No major issues
- Concern re volume
- Discuss at ABIM in 6/10

6/10 ABIM BOD Mtg

- Meets criteria
- Unanimously Approved
- Contingent
 - Business model
 - ABP collaboration

ACHD Subspecialty Certification Timeline

2007	2008	2009	2010	2011	2012
<ul style="list-style-type: none">• 9/07 Chicago JCCHD	<ul style="list-style-type: none">• 1/08 Wash DC• 9/08 WC formed ABIM & ABP• 12/08 Petitions ABIM & ABP	<ul style="list-style-type: none">• 7/09 ABIM Initial Petition Submission• 10/09 ABP Initial Petition Submission• 12/09 ABIM Petition Re-submission	<ul style="list-style-type: none">• 6/10 ABIM BOD Meets criteria• Unanimously Approved• Continent Business Models ABP Collaboration	<ul style="list-style-type: none">• 1/11 Wash DC ACC ABIM• 9/11 Application COCERT ABMS	<ul style="list-style-type: none">• 3/12 COCERT Defense #1• 8/12 COCERT Defense #2• 8/12 COCERT Approved



Since COCERT Approval

- Awaiting full ABMS approval
- Possible first exam 2014
- ACGME approval next

Pathways to ACHD Fellowship

Residency

Cardiology

ACHD Fellowship

General
PEDS

Cardio
PEDS

General
IM

Cardio
IM

General
IM/PEDS

Cardio PEDS

Cardio IM

ACHD

ACHD

1

2

3

4

5

6

7

8

9

Year

Change The Outcome

- ACHD Subspecialty Certification
 - Expand fellowship training
 - Peds and IM cardiology divisions support
- Improve the CHD requirements for IM cardiology training
- Multi-Center Research: HF, SCD, new technologies

Alliance for Adult Research in Congenital Cardiology (AARCC)

University of Washington, Seattle, WA
Oregon Health & Science Univ, Portland, OR
University of California, Los Angeles, CA
University of Colorado, Denver, CO
Mayo Clinic, Rochester, MN
Medical College of Wisconsin, Milwaukee, WI
NCH/Ohio State University, Columbus, OH
Pennsylvania State University, Hershey, PA
University of Pennsylvania, Philadelphia, PA
Columbia University, New York, NY
Children's Hospital Boston, Boston, MA
Montreal Heart Institute, Montreal, QC
Baylor University, Houston TX
Emory University, Atlanta, GA



Change The Outcome

- ACHD Subspecialty Certification
- Multi-Center Research
- Evidence Based Clinical Guidelines

PRACTICE GUIDELINE: FULL TEXT

ACC/AHA 2008 Guidelines for the Management of Adults With Congenital Heart Disease

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Develop Guidelines on the Management of Adults With Congenital Heart Disease)

Developed in Collaboration With the American Society of Echocardiography, Heart Rhythm Society, International Society for Adult Congenital Heart Disease, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons

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EXPERT OPINION

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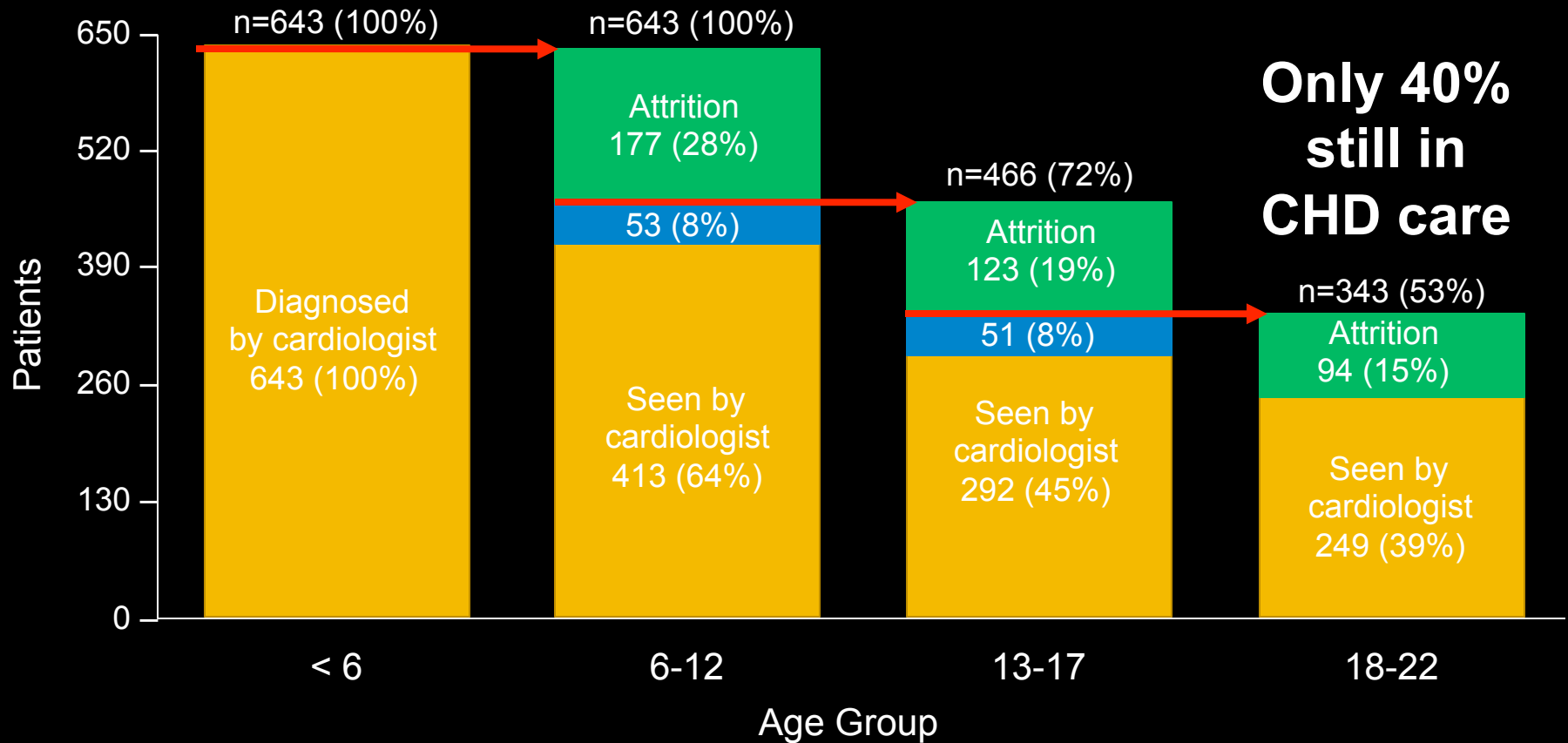
Change The Outcome

- ACHD Subspecialty Certification
- Multi-Center Research
- Evidence Based Clinical Guidelines
- Guidelines to Quality Metrics
 - ACC to develop ACHD QM
 - NIH study develop lesion specific QI

Change The Outcome

- ACHD Subspecialty Certification
- Multi-Center Research
- Evidence Based Clinical Guidelines
- Quality Metrics
 - ACC to develop ACHD QM
 - NIH study develop lesion specific QI
- Reduce Lost to Care

LOST TO CARE





The Adolescent & Adult Congenital Heart Disease Transition Education Program

*Transitioning Adolescents and Young Adults
to Adult Congenital Heart Disease Care*



Change The Outcome

- ACHD Subspecialty Certification
 - Expand fellowship training
 - Peds and IM cardiology divisions support
- Multi-Center Research: HF, SCD
- Evidence Based Clinical Guidelines
- Quality Metrics
- Reduce Lost to Care
- ACHD Program Development
 - Structure within the pediatric and adult hospitals
 - Divisional/Hospital Support
 - Accredited

Change The Outcome

- ACHD Subspecialty Certification
 - Expand fellowship training
 - Peds and IM cardiology divisions support
- Multi-Center Research: HF, SCD
- Evidence Based Clinical Guidelines
- Quality Metrics
- Reduce Lost to Care
- ACHD Program Development
 - Structure within the pediatric and adult hospitals
 - Divisional/Hospital Support
 - Accredited
- Improve Communication and Education among Internal Medicine, Pediatric and ACHD cardiologists



PATCH



ACC Chapters Unite with the Adult Congenital Heart Association to Improve the Care for ACHD Patients:

*Provider Action for Treating Congenital Hearts (PATCH)
Pilot Program Chapter Opportunities*

ACC BOG and Chapters ↔ ACHA

The ACC/ACHA Provider Action for Treating Congenital Hearts (PATCH) Program:

ACHA and ACC are working to collaborate on the PATCH Program to address four major challenges to the provision of high quality coordinated ACHD care in the U.S.:

- Lack of educational resources specific to the complex needs of the ACHD population
- Lack of awareness of ACHD care guidelines
- Access to ACHD trained cardiologists and centers of excellence
- Lack of networking between ACHD specialists and cardiologists

A satellite-style map of North America, showing the United States and parts of Canada and Mexico. The map is overlaid with a semi-transparent blue rectangular box in the upper central region. Five red dots are placed on the map to indicate pilot patch locations, each with a corresponding state name in white capital letters. The states are California, Michigan, Ohio, Georgia, and Massachusetts. The text 'PILOT PATCH 2012-2013' is centered within the blue box.

PILOT PATCH 2012-2013

CALIFORNIA

MICHIGAN

MASS

OHIO

GEORGIA



PATCH



ACC Chapters Unite with the Adult Congenital Heart Association to Improve the Care for ACHD Patients:

*Provider Action for Treating Congenital Hearts (PATCH)
Pilot Program Chapter Opportunities*

ACHD
ACC Chapter
Lecture

ACHD
Webinars

ACHD
Toolkit

Create
Networking



PATCH



ACC Chapters Unite with the Adult Congenital Heart Association to Improve the Care for ACHD Patients:

*Provider Action for Treating Congenital Hearts (PATCH)
Pilot Program Chapter Opportunities*

Internal
Medicine
Cardiology

ACHD
Cardiology

Pediatric
Cardiology



Adult Congenital Heart Disease

Change The Outcome

Curt J Daniels, MD, FACC

Associate Professor, Internal Medicine and Pediatrics

Director, **COACH** Program **C**olumbus **O**hio **A**dult **C**ongenital **H**eart Disease and
Pulmonary Hypertension Programs

Division of Cardiology, The Ohio State University & The Heart Center at Nationwide
Children's Hospital

