



Congenital Heart Disease: Greatest Success Story in Medicine!

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University Health Network

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Congenital Heart Disease: Greatest Success Story in Medicine!

Who Are The Heroes?



What Is A Hero?

- Individual with heroic qualities and has performed heroic act...
- Individual who makes a difference to his/her peers
 - INNOVATION!
-

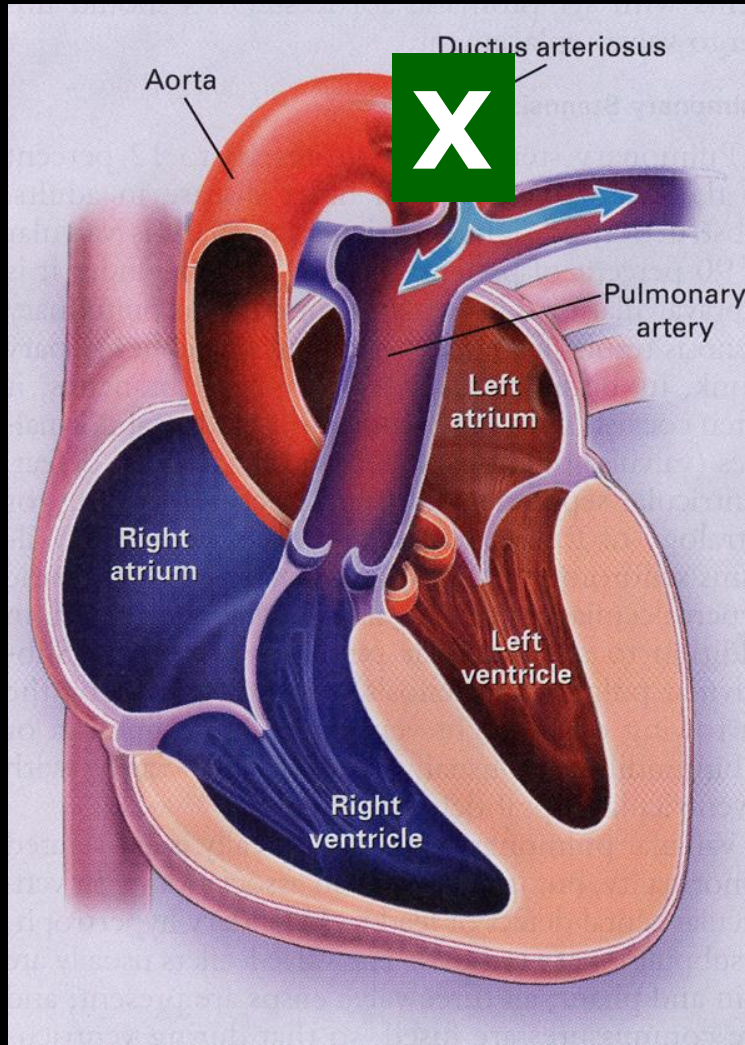


1938

1st Operation in CHD



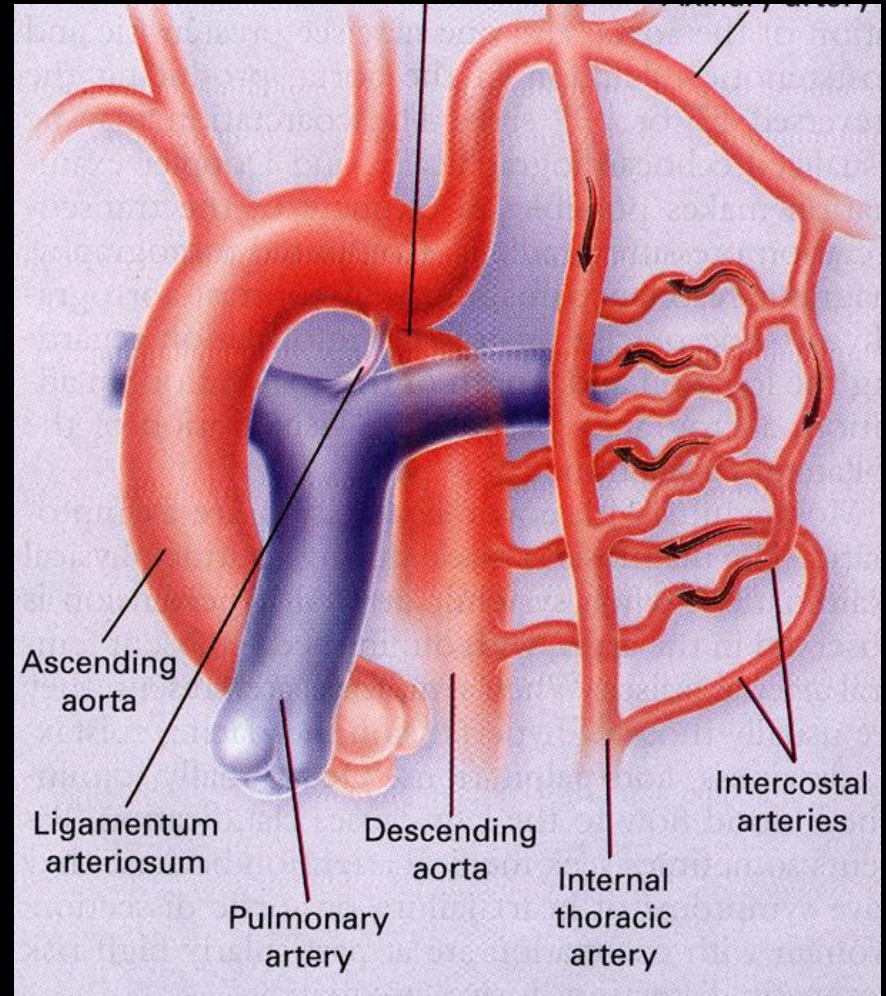
R.E. Gross
Boston, USA



1944 - Operation Aortic Coarctation



C. Crafoord
Stockholm, SE

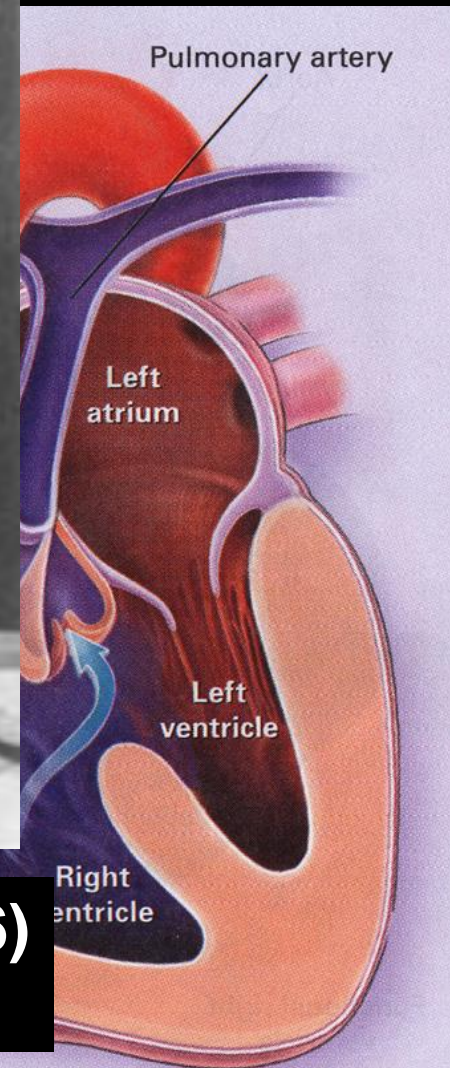


Tetralogy of Fallot



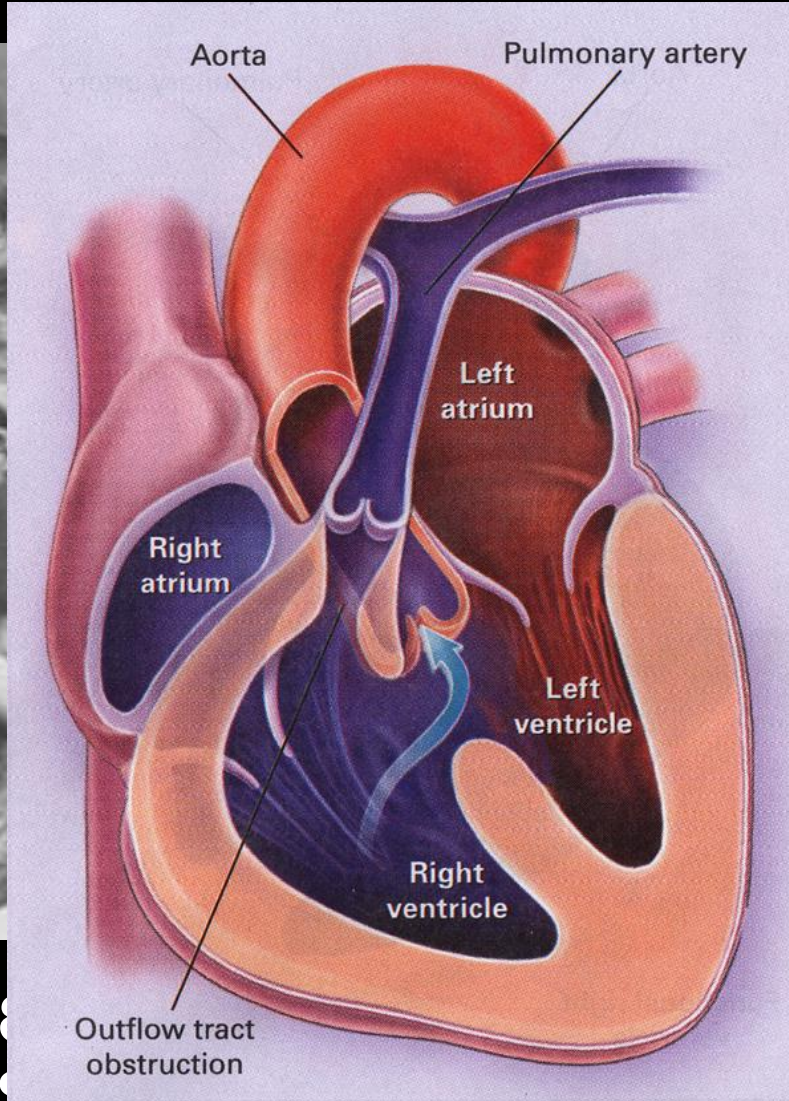
zy
Säugmg

Helen B. Taussig (1898-1986)
Baltimore, USA



obstruction

1944

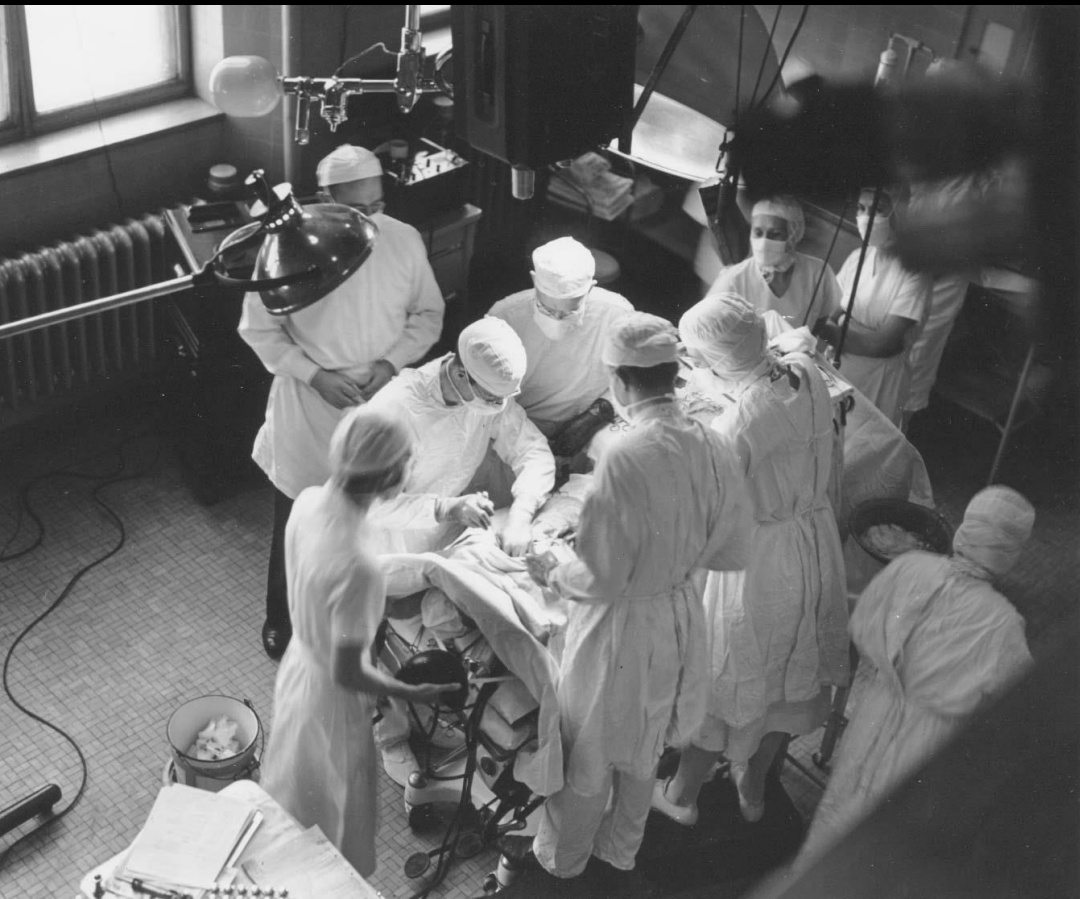


Helen B. Taussig (1896-1986)
Baltimore, USA

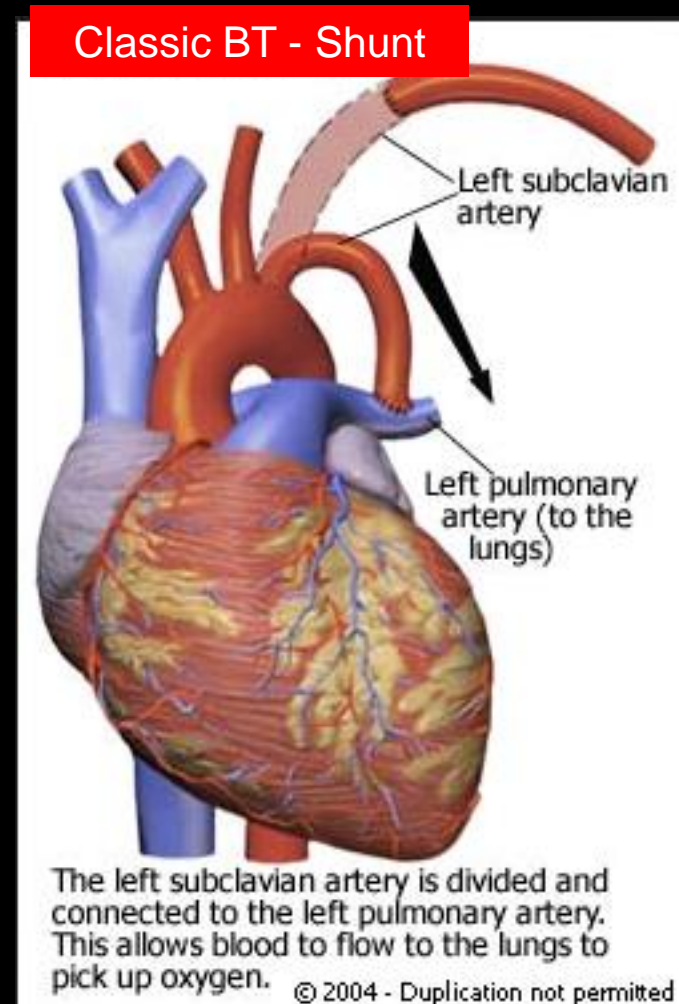
Walter Dill Scott (1899-1964)
Baltimore, USA

Tetralogy of Fallot

Blalock-Taussig Shunt in 1944



Dr. A. Blalock and
his team: Nov 29, 1944



1st Heart Lung Machine in 1953

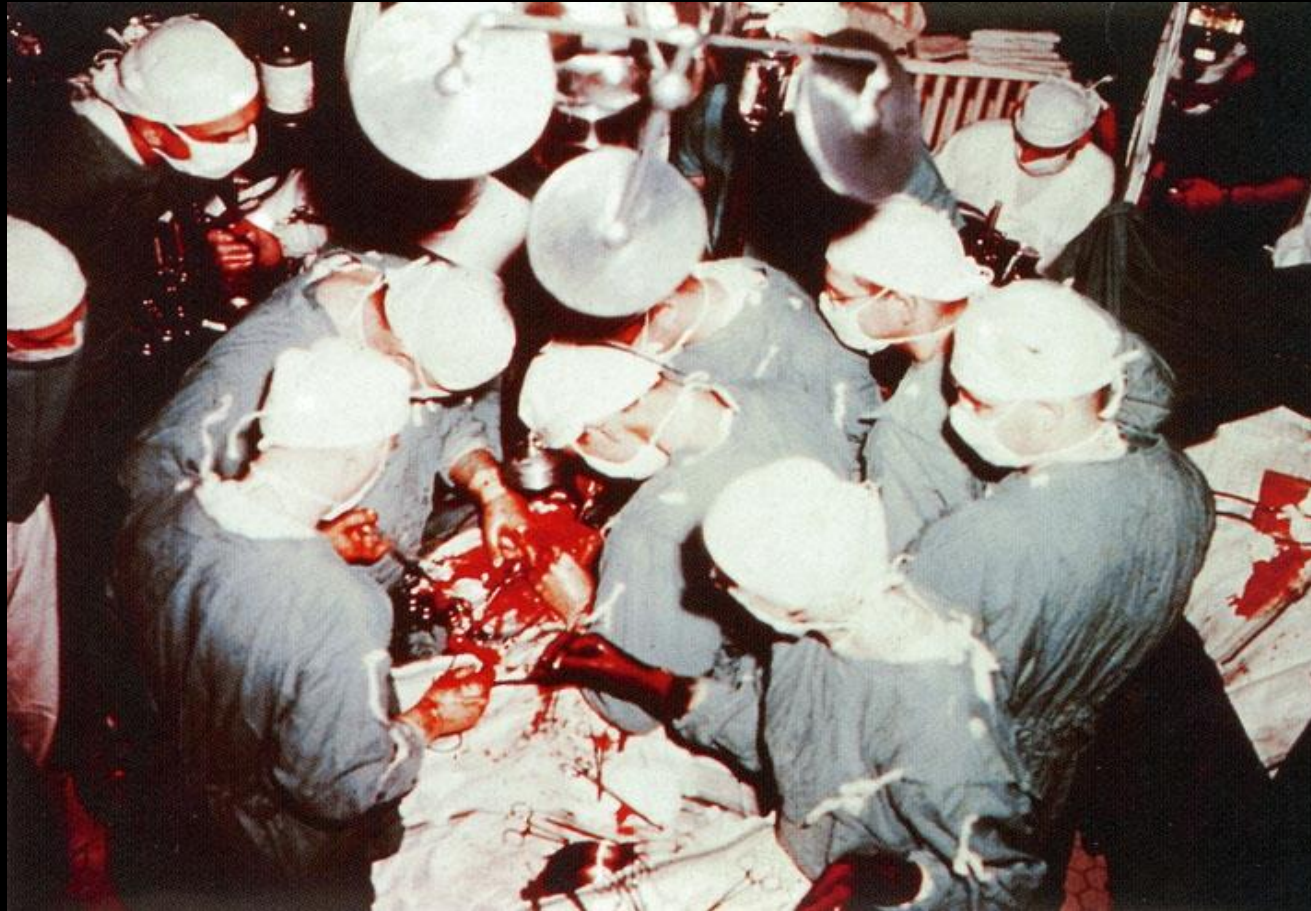


- Open Heart Surgery
- Intracardiac Repair

John H. Gibbon Jr. 1903 - 1973

C.W. Lillehei, Minneapolis, USA: First Tetralogy of Fallot Repair

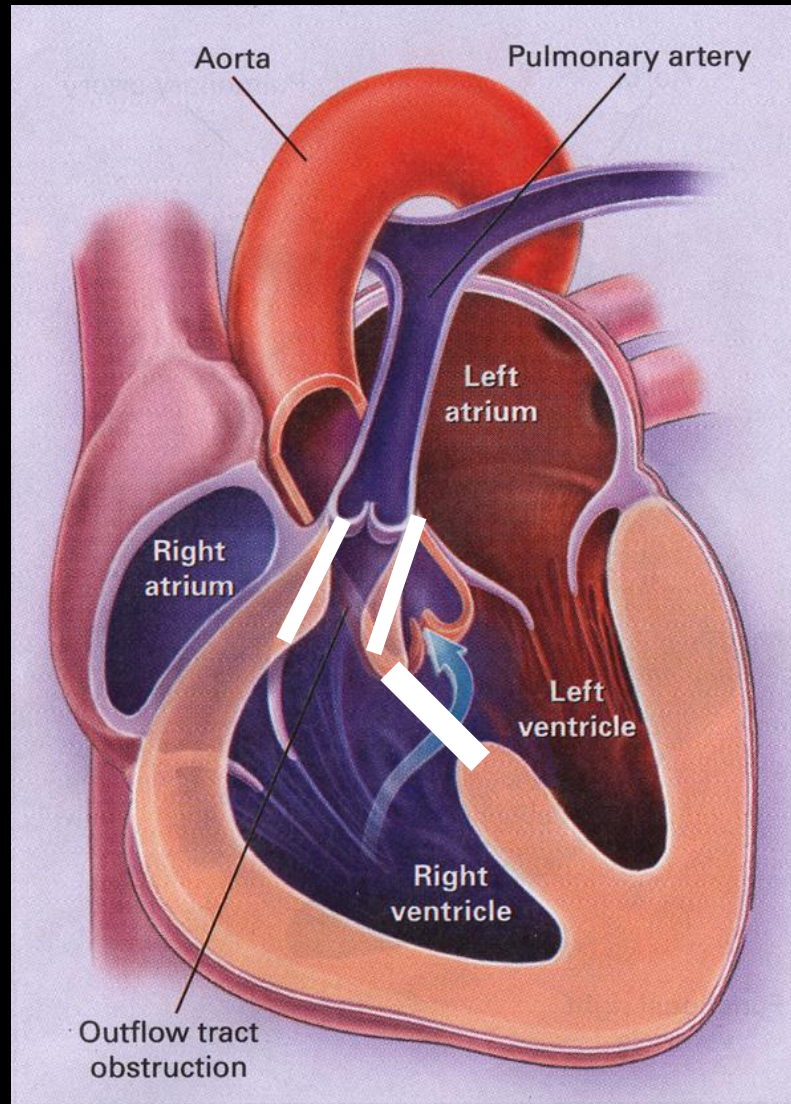
August 31,
1954

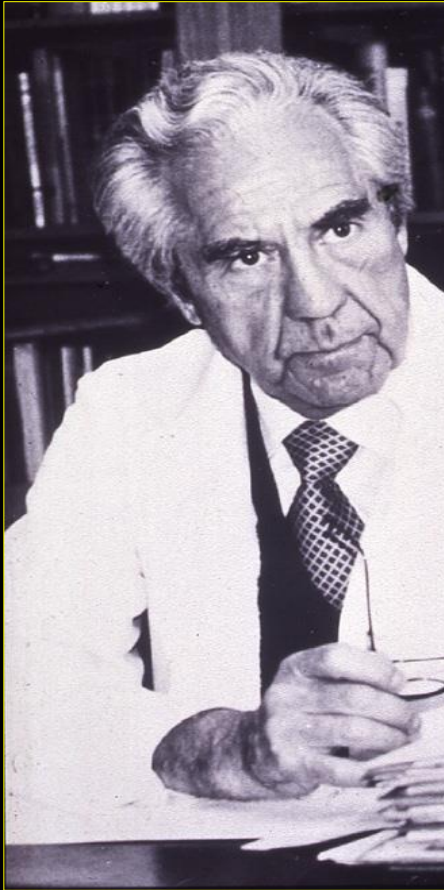


Cross-
Circulation

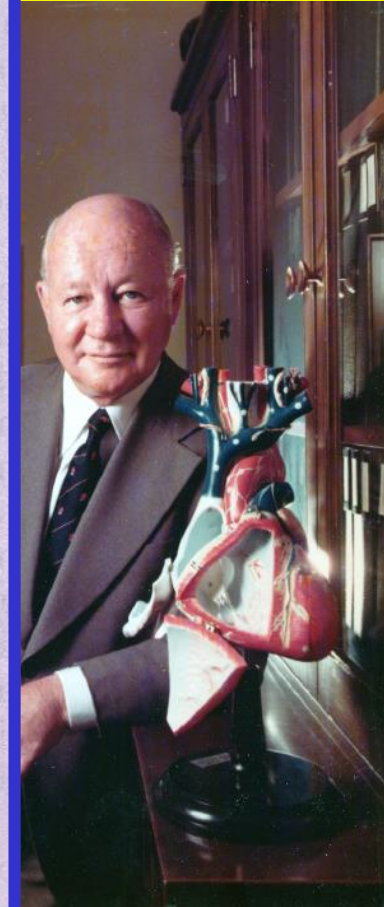
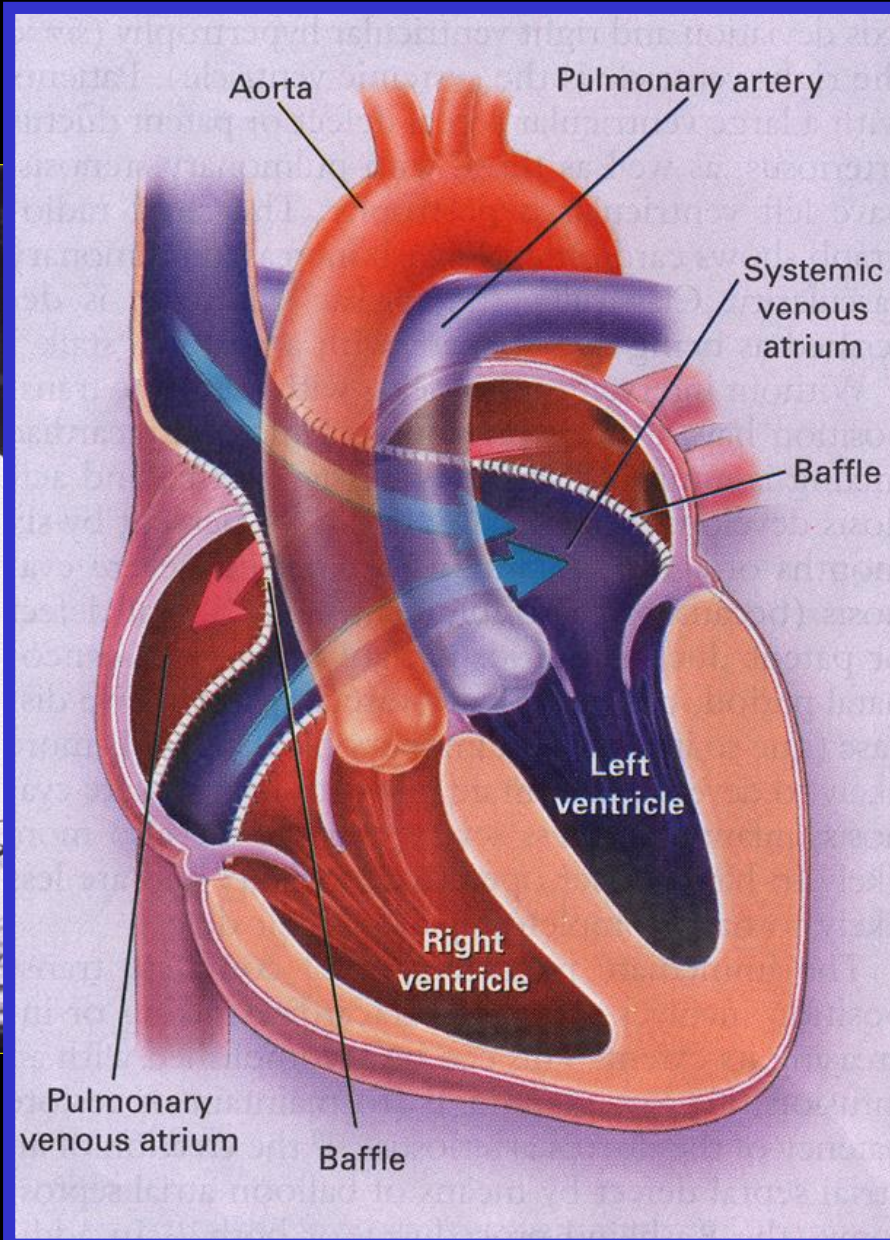
Courtesy of Dr. W. Williams, Toronto

Repair of Tetralogy of Fallot



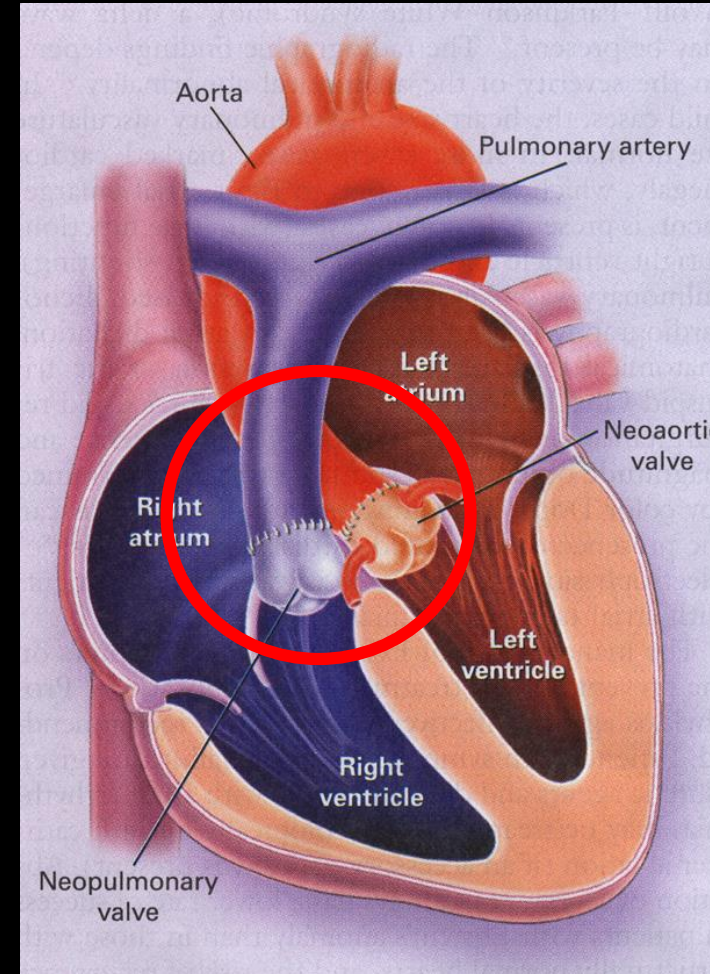
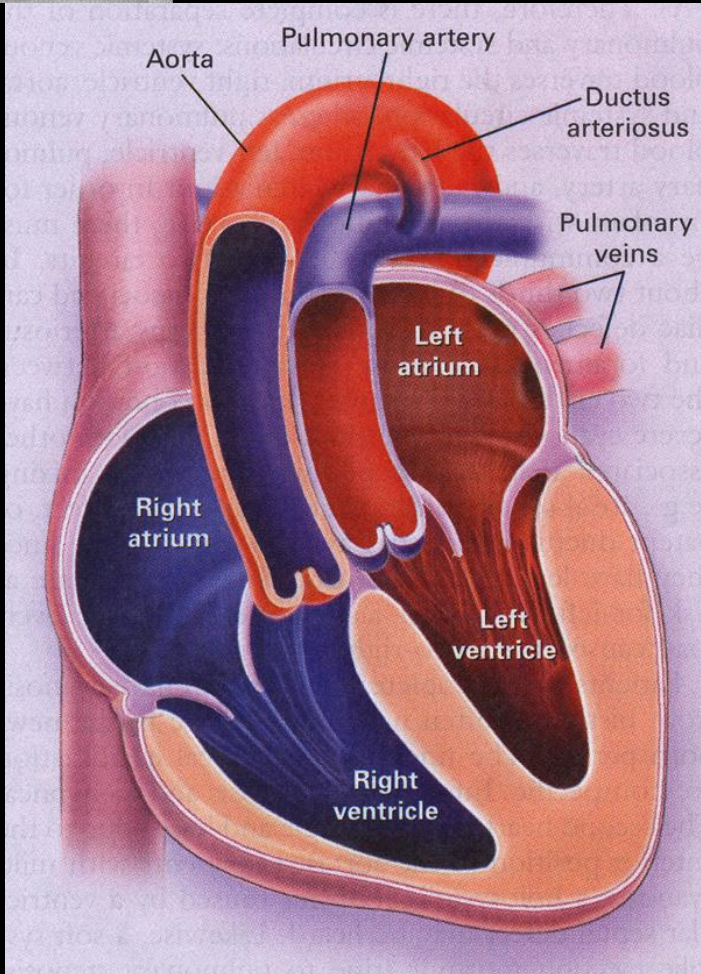
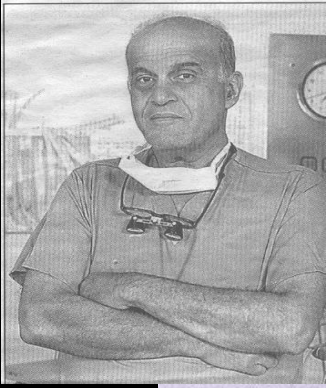


Åke Senneker
Zürich, CH



T. Mustard
Toronto, Ca

1975 - ARTERIAL Switch Procedure



Brickner ME, et al. N Engl J Med 2000;342:334-342

Surgical Concepts

Congenital Heart Defect

Subpulmonic and subaortic ventricles

Adequate size

Inadequate size

Biventricular Repair

UNIVentricular Repair

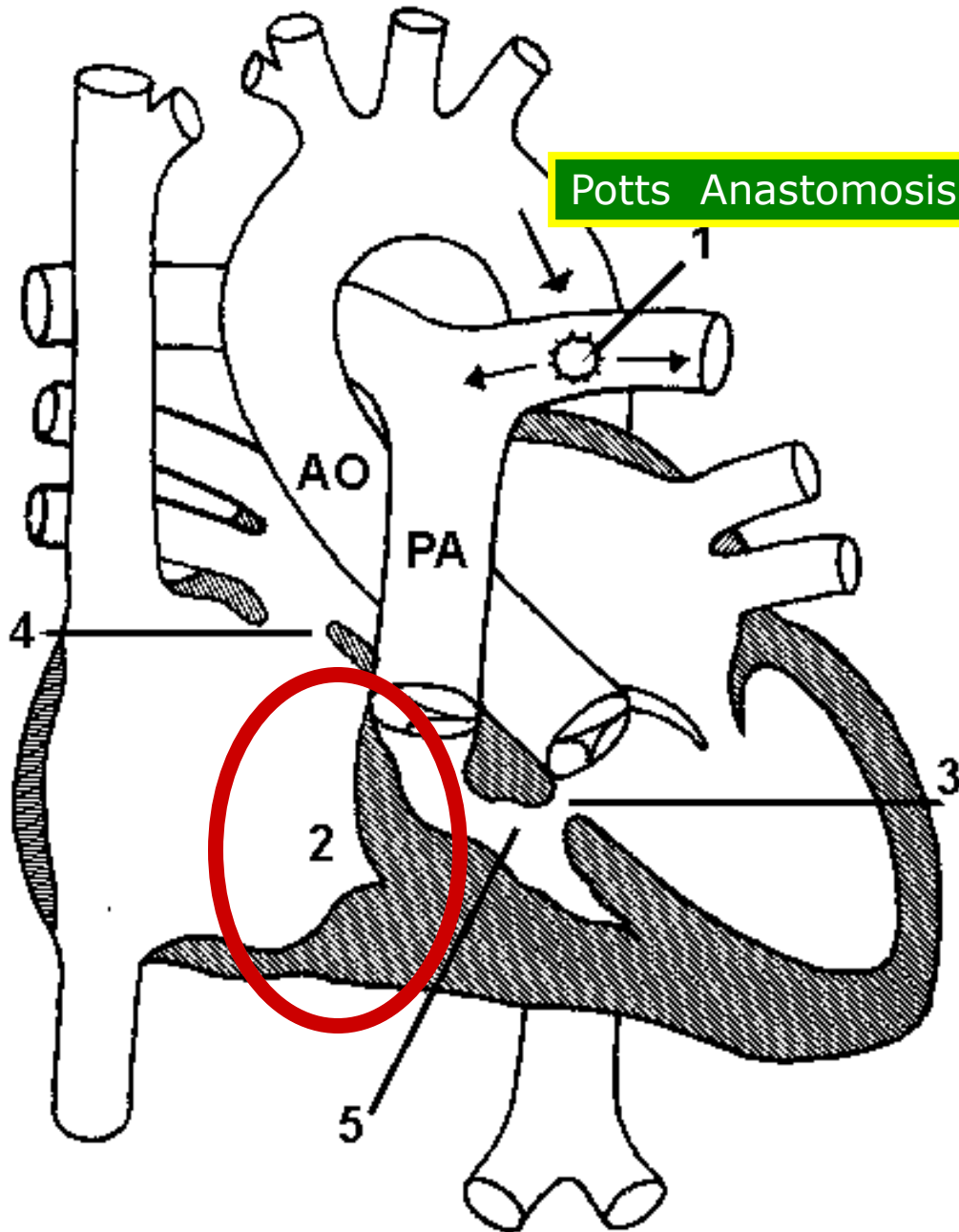




F. Fontan

Tricuspid Atresia with ASD and VSD

Potts Anastomosis



Fontan Procedure

- Not suitable for biventricular repair
- Separation of the systemic and pulmonary circulation

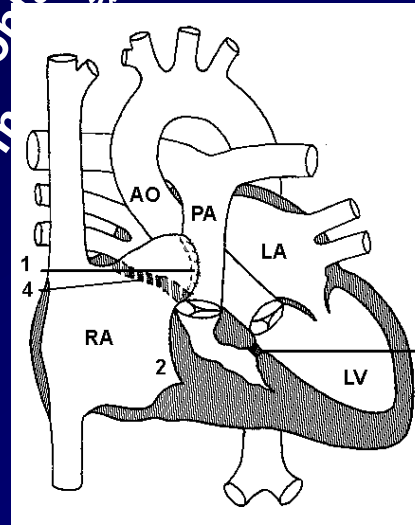
Historical Aspects

1956 – EN Meshalkin (Russia)
Successful right cavo-
pulmonary shunt in child with
TOF

1958 – WW Glenn
Classic Glenn
anastomosis

1961 – 1972
Different authors

1971 Fontan procedure/
its modifications



1950

1960

1970

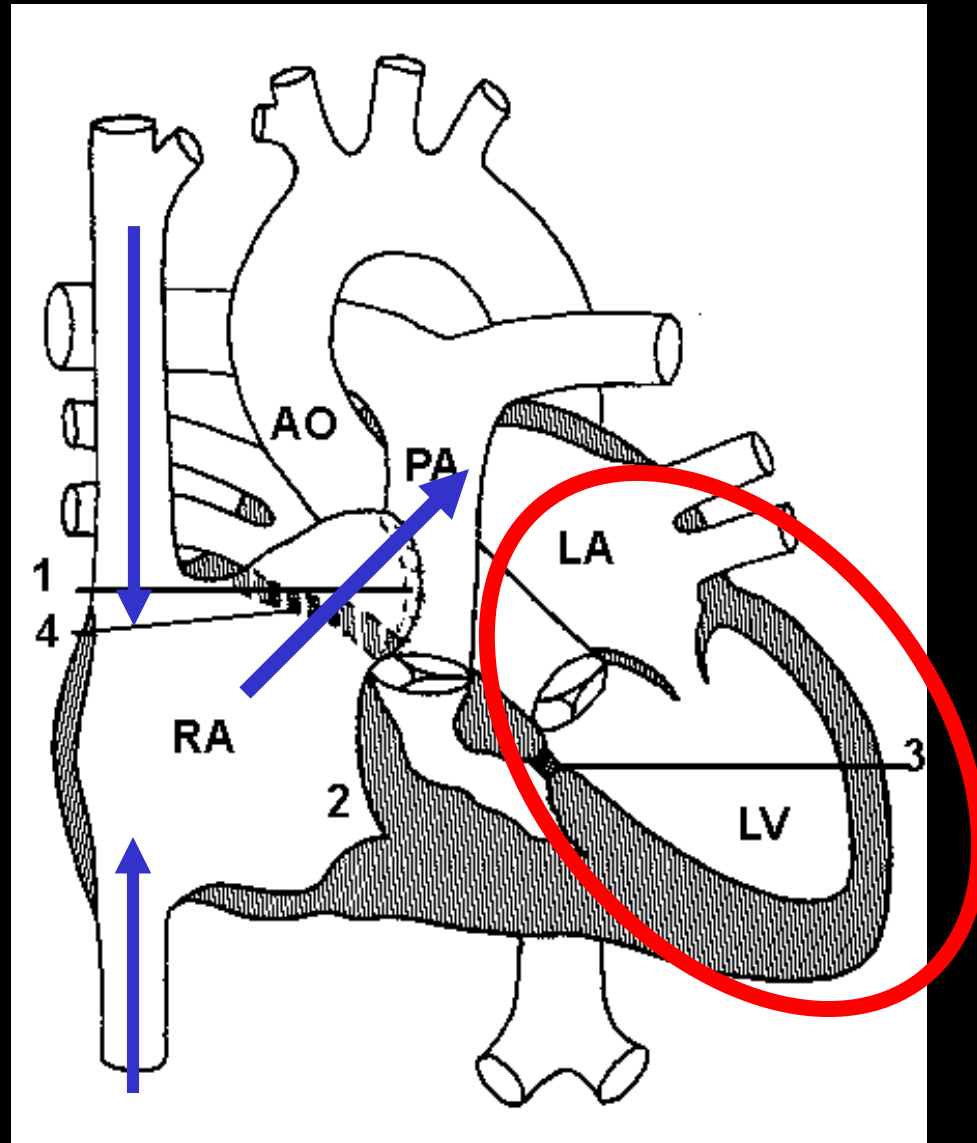
1980

1990

2000



1971: Fontan - Circulation



Historical Aspects

1956 – EN Meshalkin (Russia)
Successful right cavo-pulmonary
shunt in child with TOF

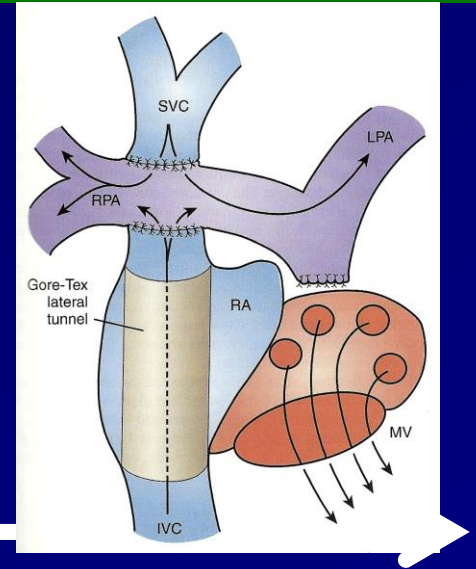
1958 – WW Glenn
Classic Glenn anastomosis

1961 – 1972
Different authors

1971 Fontan procedure/
its modifications

1979 Bjork modification

1987
Lateral tunnel Fontan



1950

1960

1970

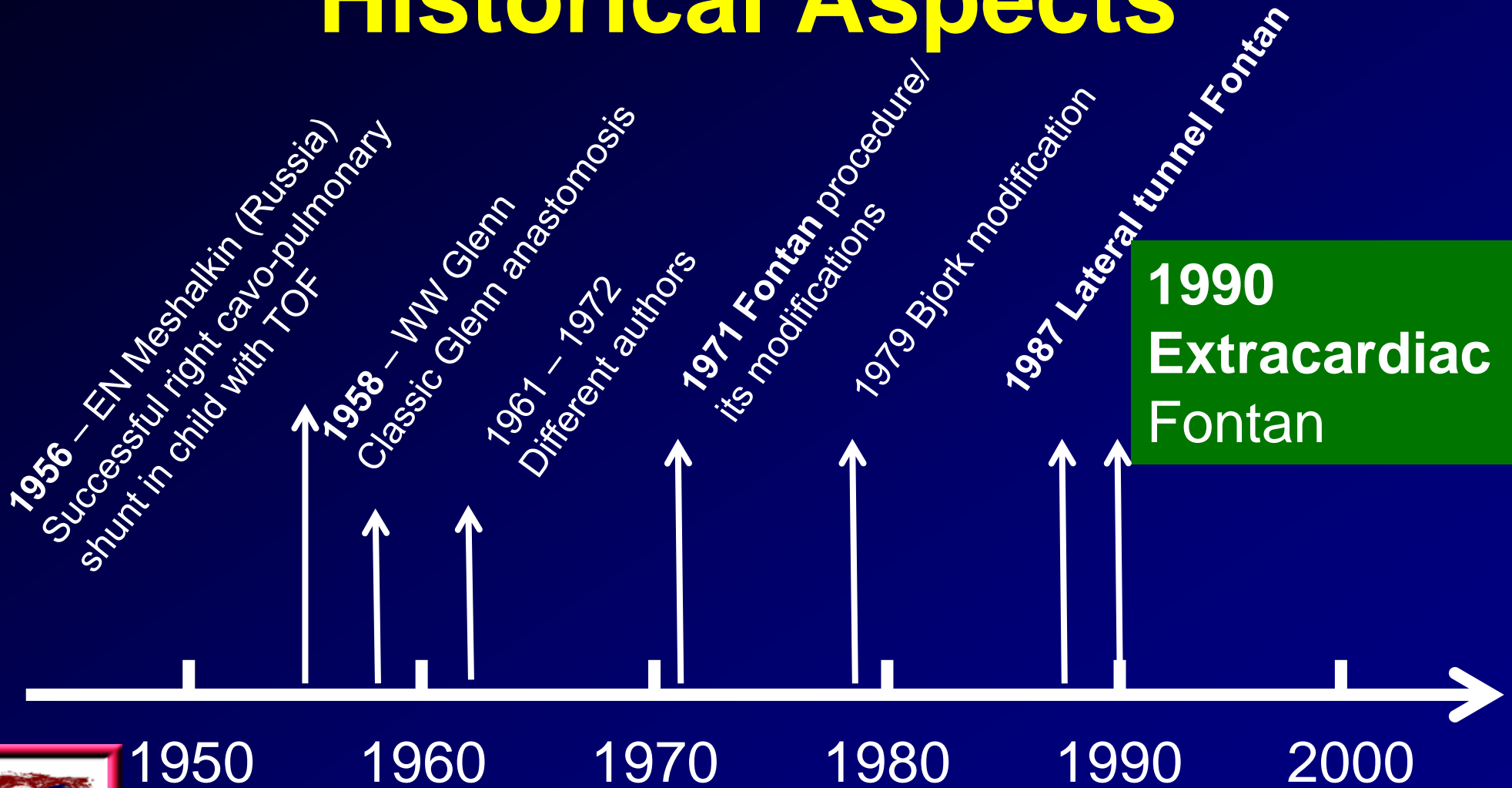
1980

1990

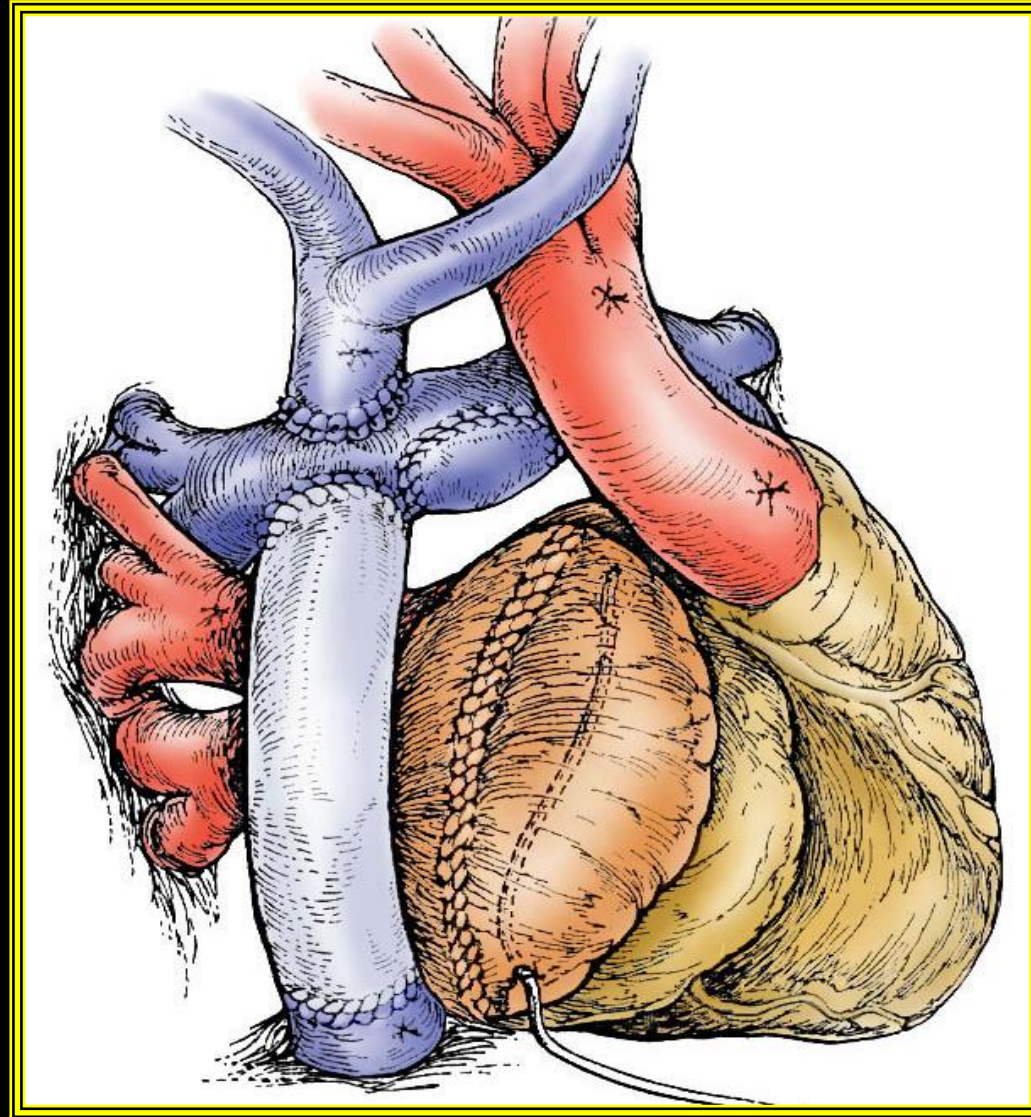
2000



Historical Aspects

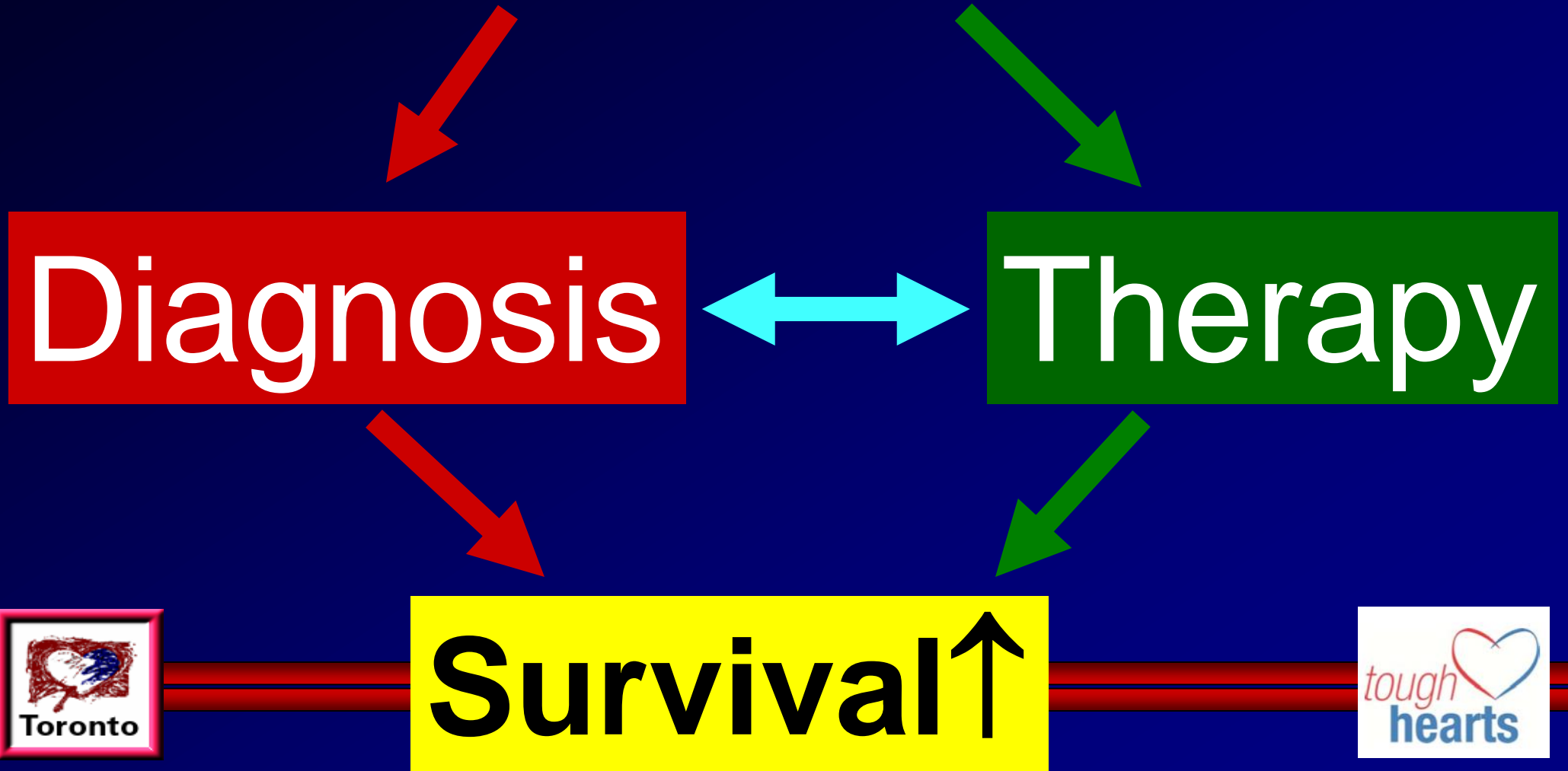


Extracardiac Fontan

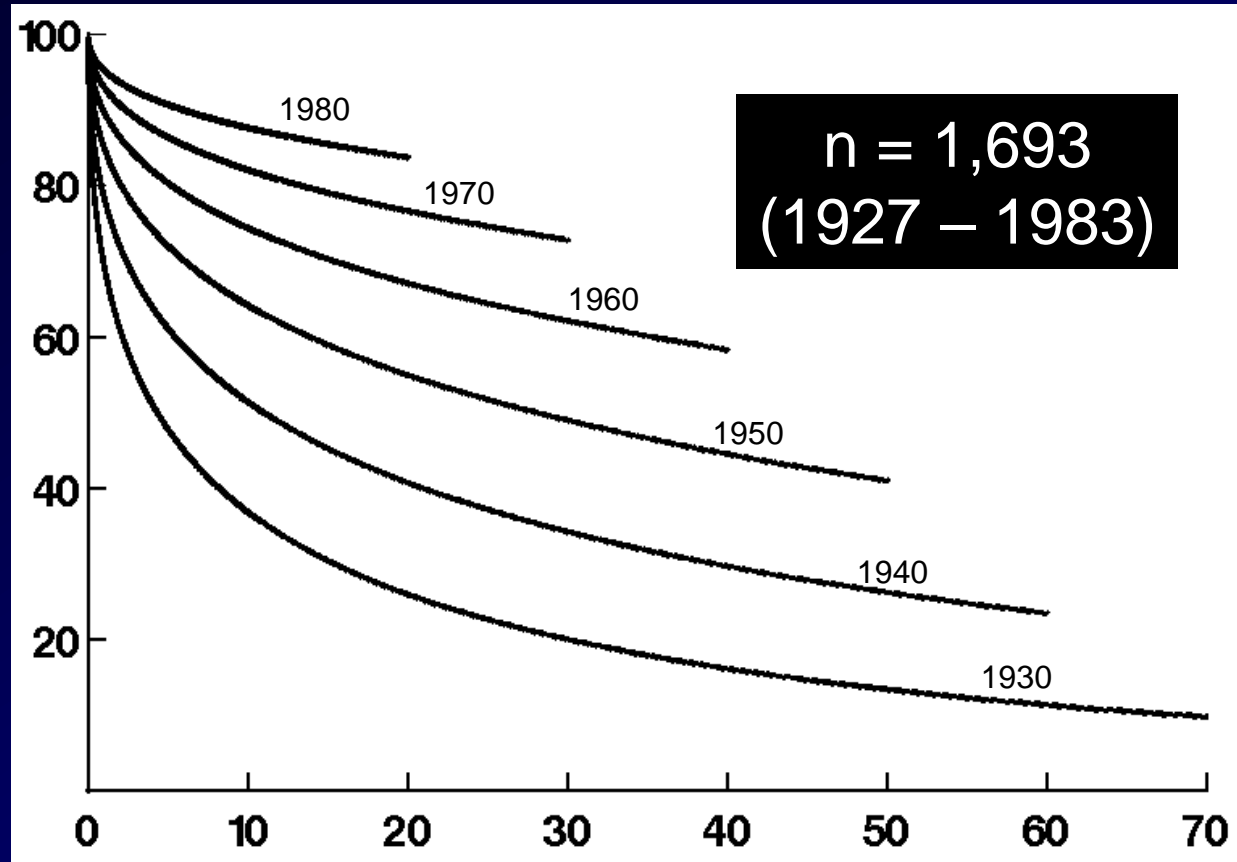


Courtesy by
Prof. Rene Pretre, Zurich/Lausanne (CH)

Advances



Survival in Tetralogy of Fallot by decade of birth at HSC, Toronto



Hickey EJ, Manlhiot C, McCrindle BW 2007

Heart and Stroke Foundation of Ontario "Functional outcomes in Tetralogy of Fallot"

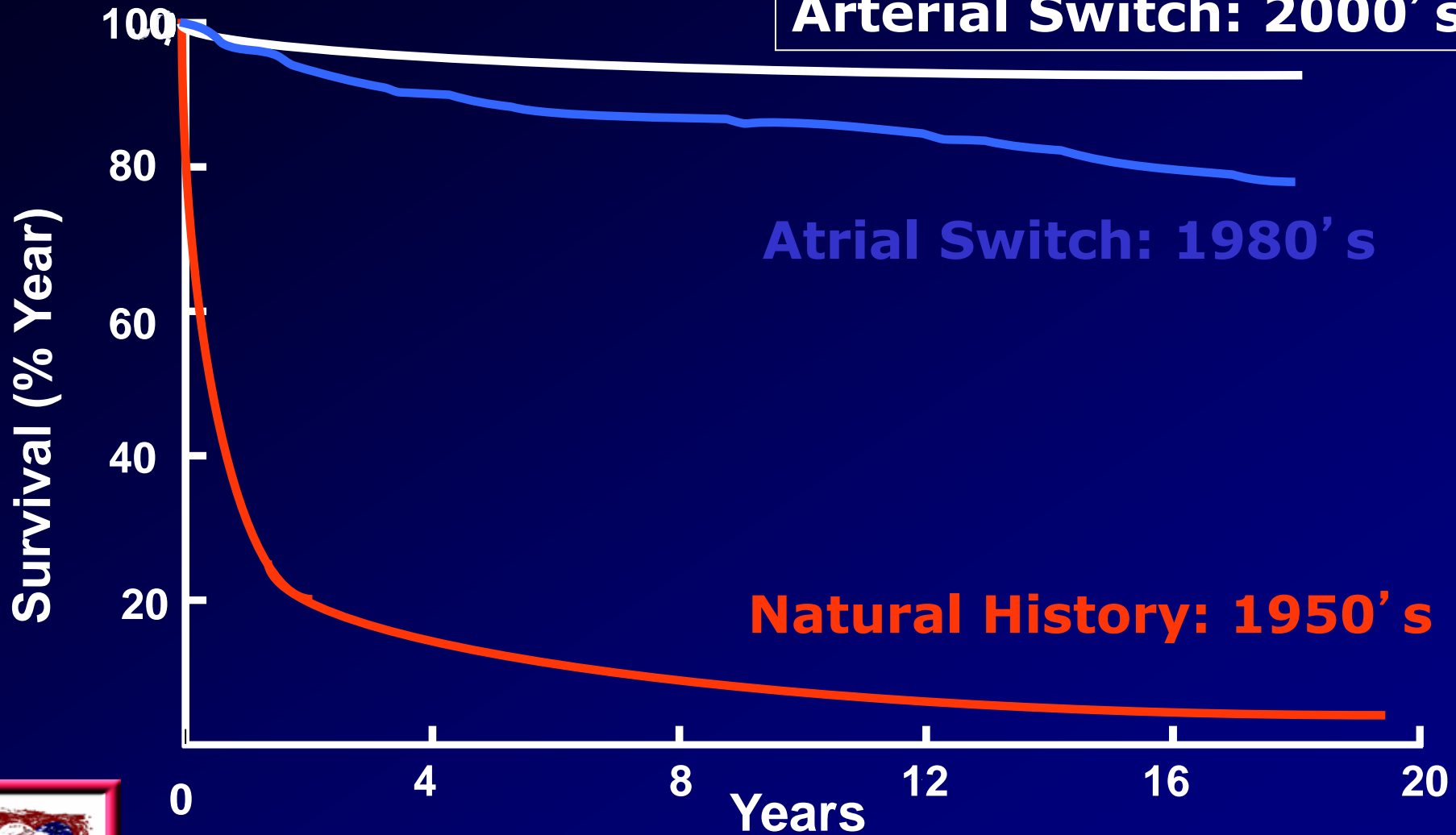


Survival of Complete TGA

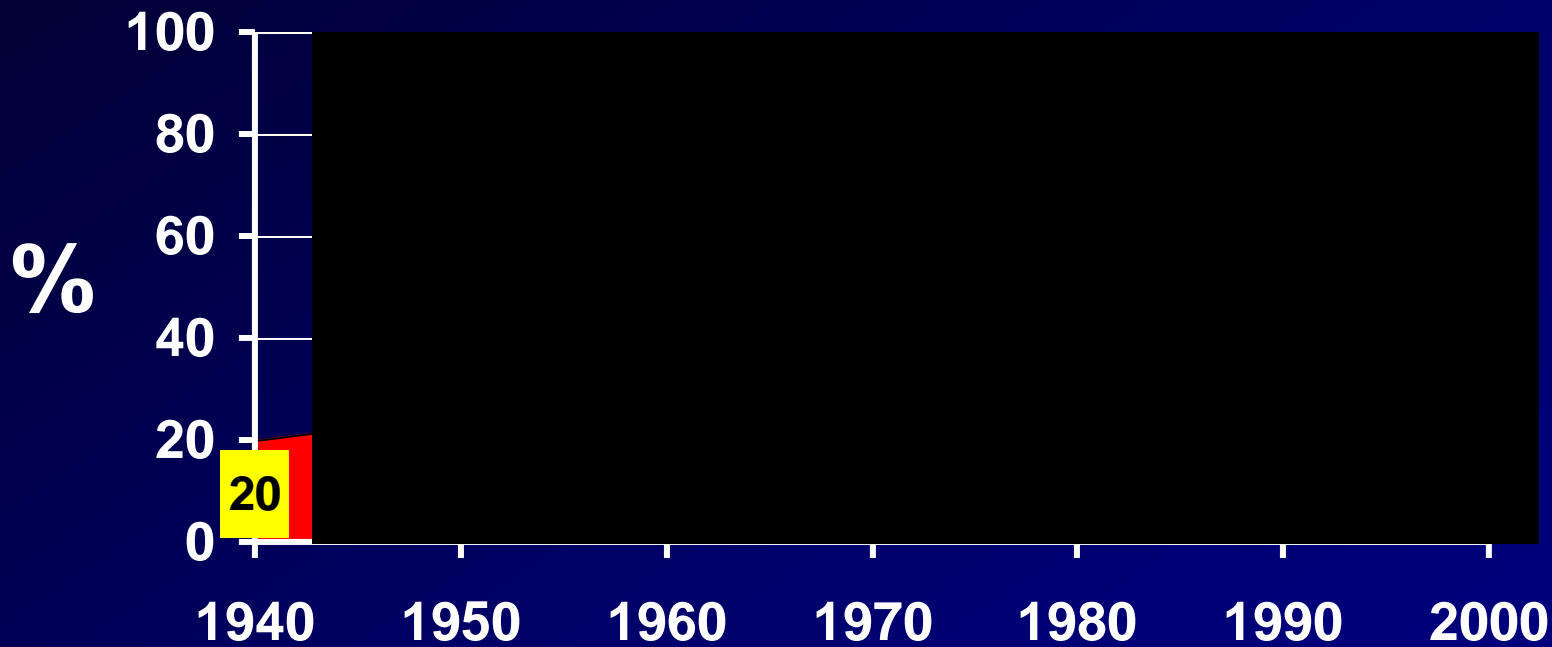
Arterial Switch: 2000's

Atrial Switch: 1980's

Natural History: 1950's

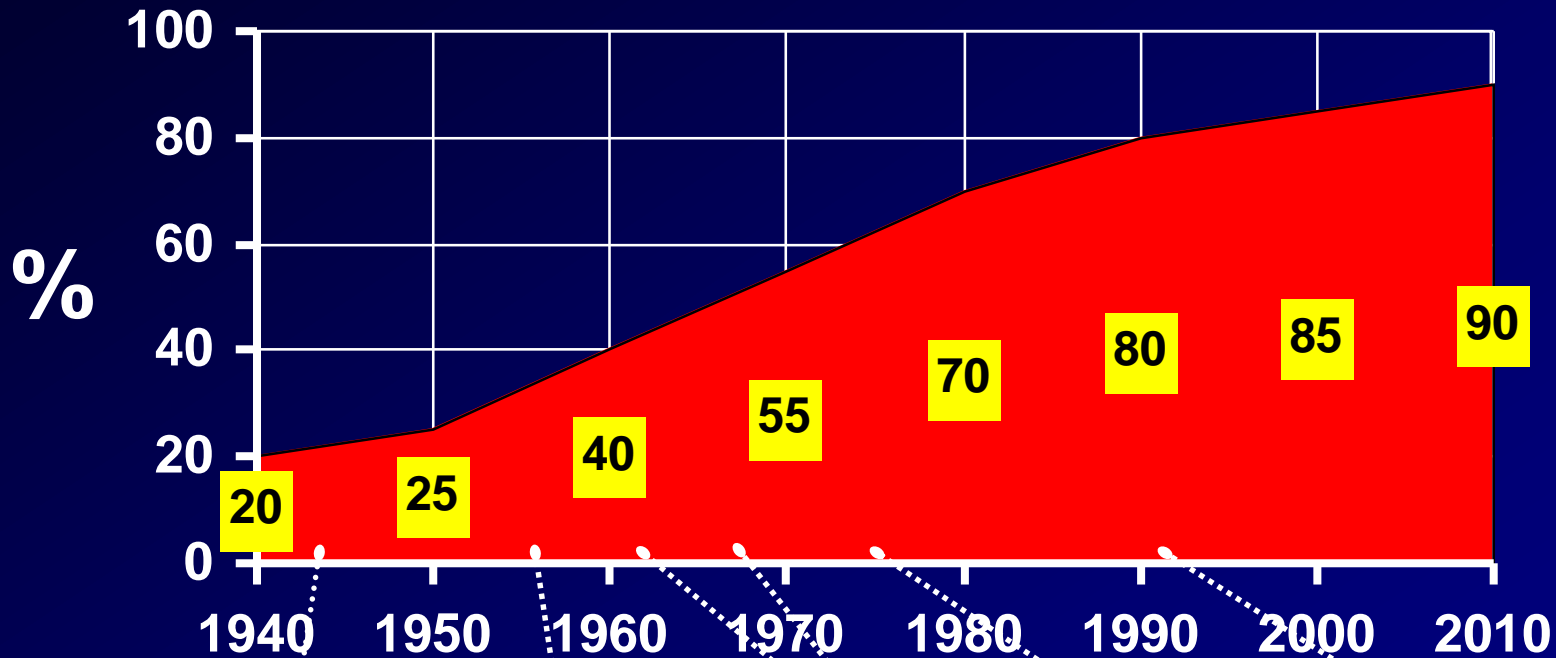


Survival Rate in CHD and Milestones in Cardiac Surgery



Courtesy of Prof. H. Kaemmerer, Munich

Survival Rate in CHD and Milestones in Cardiac Surgery



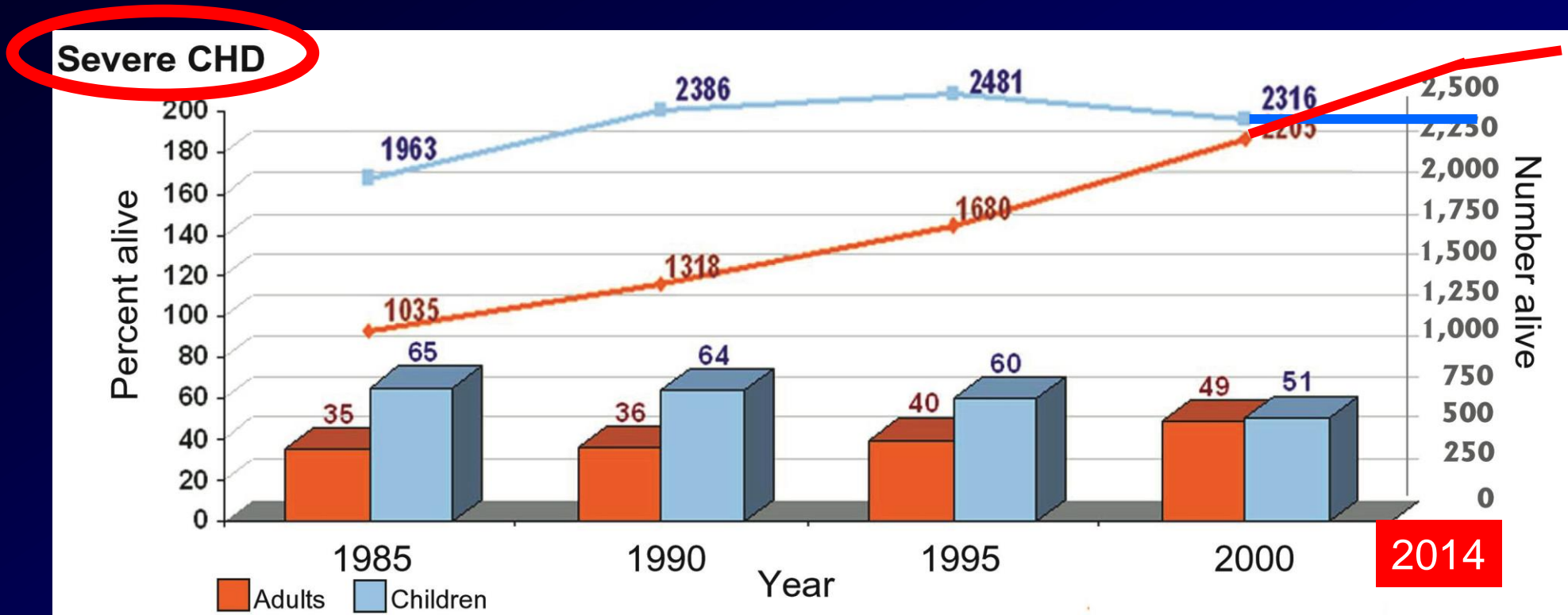
Courtesy of Prof. H. Kaemmerer, Munich

Prevalence of Severe and Other CHD

| | Adults Alive in 2000 | | Children Alive in 2000 | |
|-------------------------------|----------------------|--------------------------------------|------------------------|--|
| | n (%) | <u>Prevalence</u> per 1000 Adults | n (%) | <u>Prevalence</u> per 1000 Children |
| All congenital heart lesions* | 23 563 (100) | 4.09 | 18 979 (100) | 11.89 |
| Severe lesions | | | | |
| TOF or truncus arteriosus | 1001 | 0.17 | 778 | 0.49 |
| AVCD | 834 | 0.14 | 914 | 0.57 |
| Transposition complex | 235 | 0.04 | 424 | 0.27 |
| Univentricular hearts | 150 | 0.03 | 213 | 0.13 |
| All severe lesions | 2205 (9) | 0.38 | 2316 (12) | 1.45 |

Marelli AJ, et al. Circulation 2007; 115: 163-172

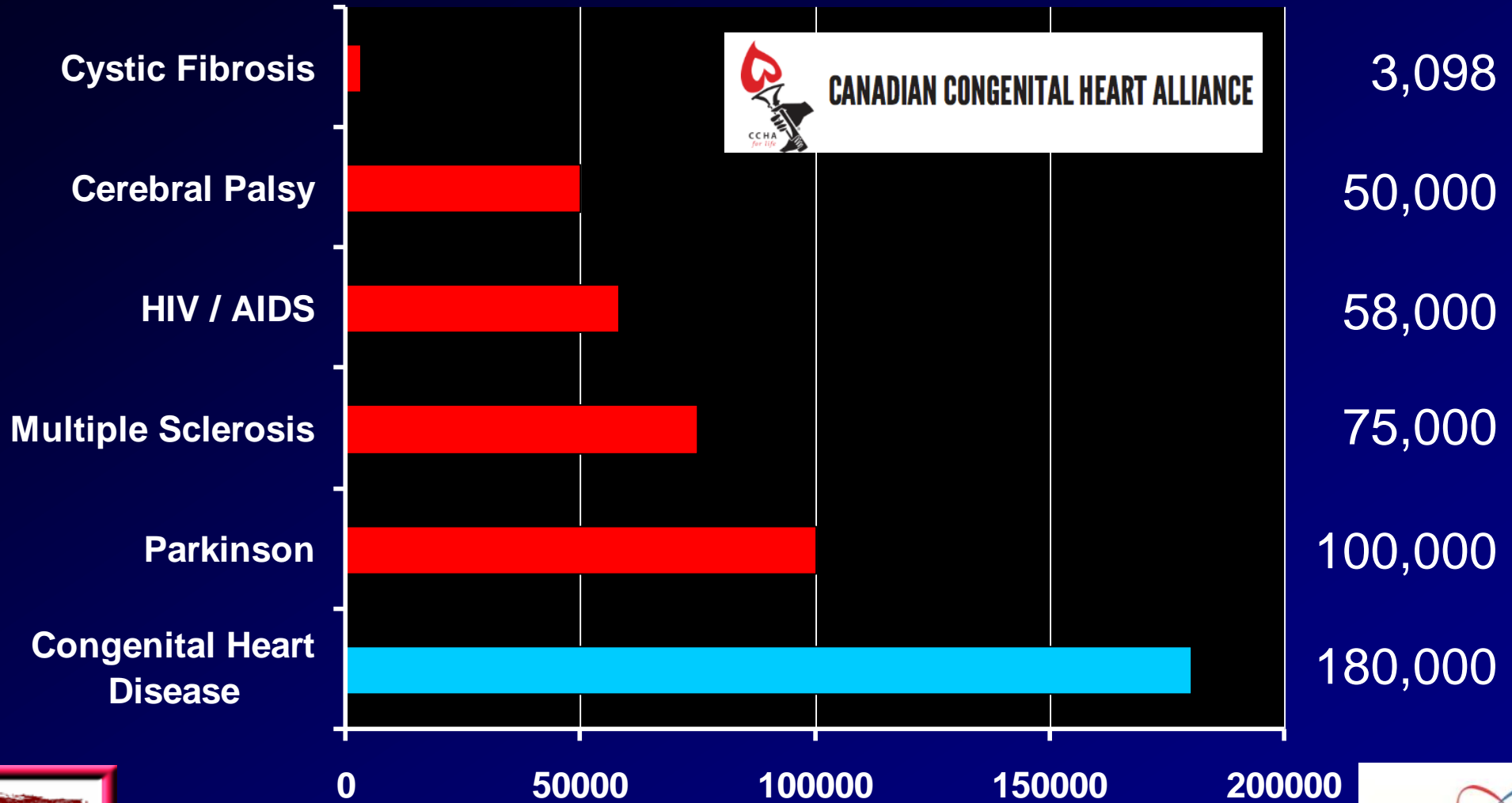
Changing Age Distribution of Severe CHD 1985 - 2000



Marelli AJ, et al. Circulation 2007; 115: 163-172



Canadian Disease Statistics



Sources: Cerebral Palsy Canada, Cystic Fibrosis Association, Public Health Agency of Canada; Canadian Congenital Heart Alliance

Surgical Repair Is NOT A CURE

- **Str**

- M

- R

- **Fur**

- P

- **Ele**

- C

- 90

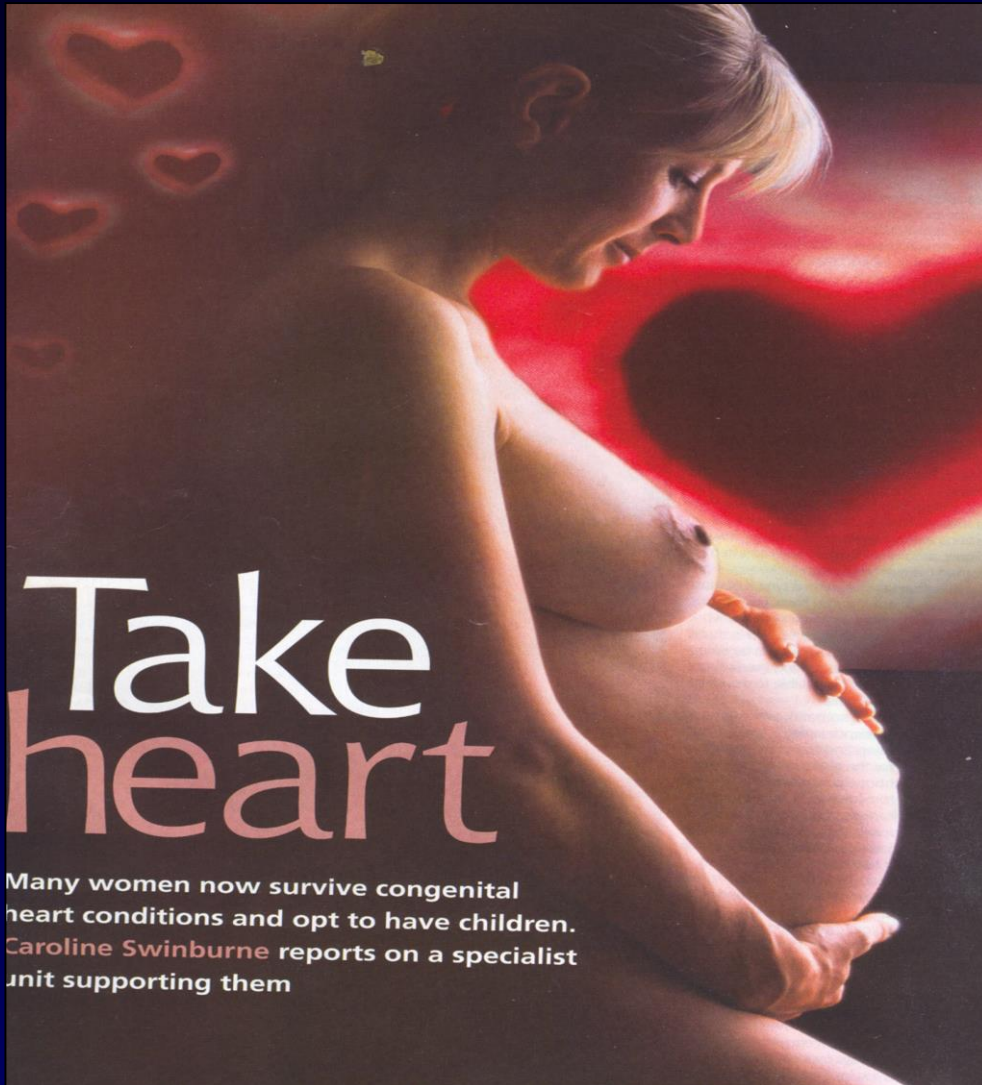
- A



an

Family Planning

- Anticonception
- Pregnancy
- Risk stratification



What is a Hero?

- Individual with heroic qualities and has performed heroic act...
- Individual who makes a difference to his/her peers
 - INNOVATION!
-





Gross



Crafoord



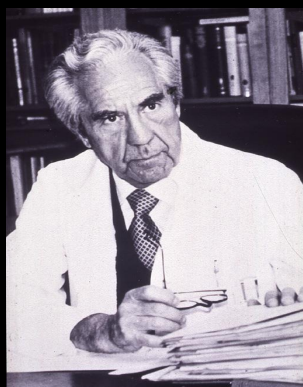
Taussig



Blalock



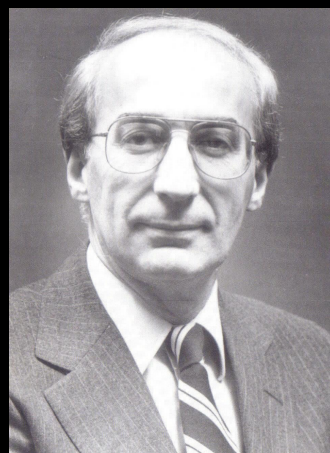
Lillehei



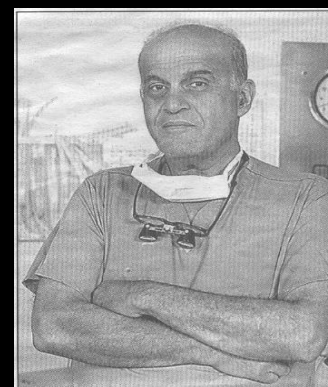
Senning



Mustard



Fontan



Yacoub



Jatene

The Forgotten Heroes

What Is A Hero?

- Individual of distinguished courage or ability
- Individual admired for his/her brave deeds and qualities
- Individual regarded as role model



What Is A Hero?

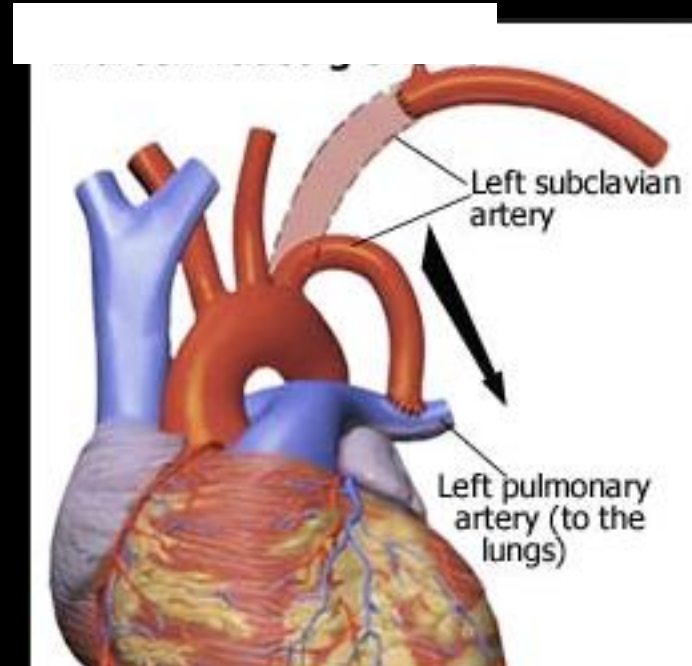
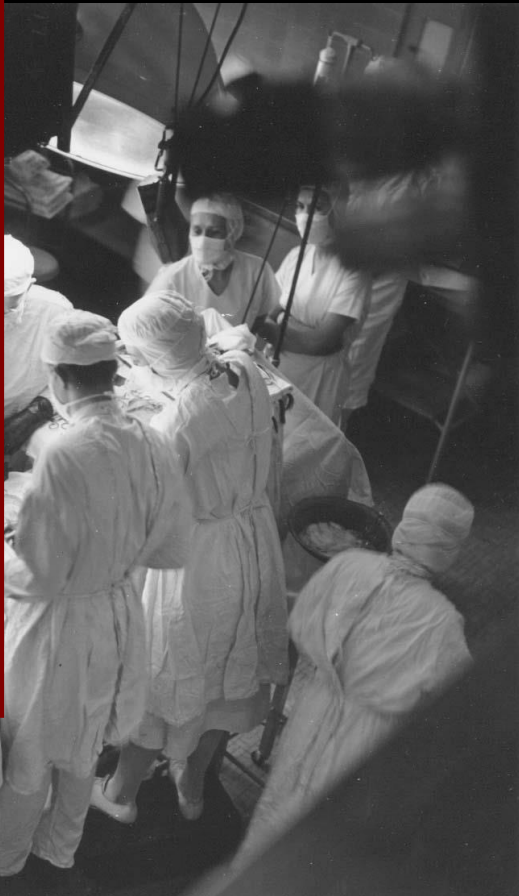
- Individual who goes beyond and above his/her capacities / limitations
-



Tetralogy of Fallot *Blalock-Taussig Shunt in 1944*



Vivian Thomas



Blalock Taussig-Thomas Shunt

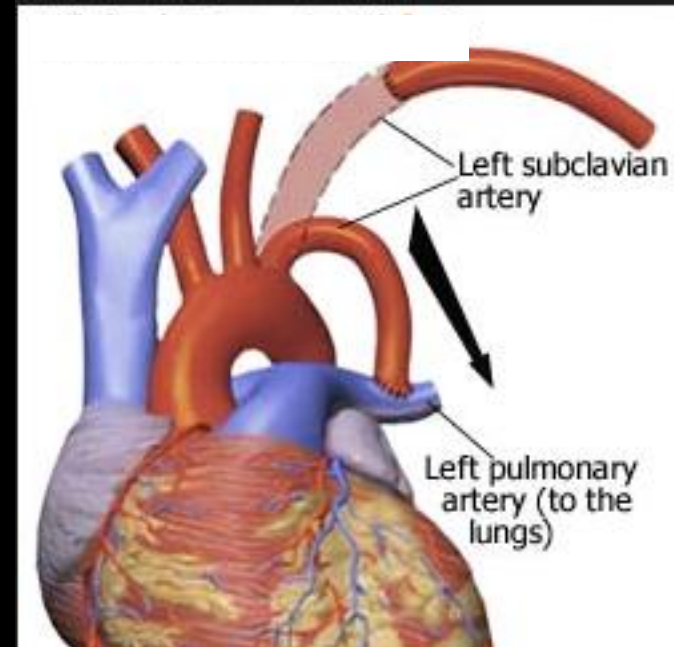
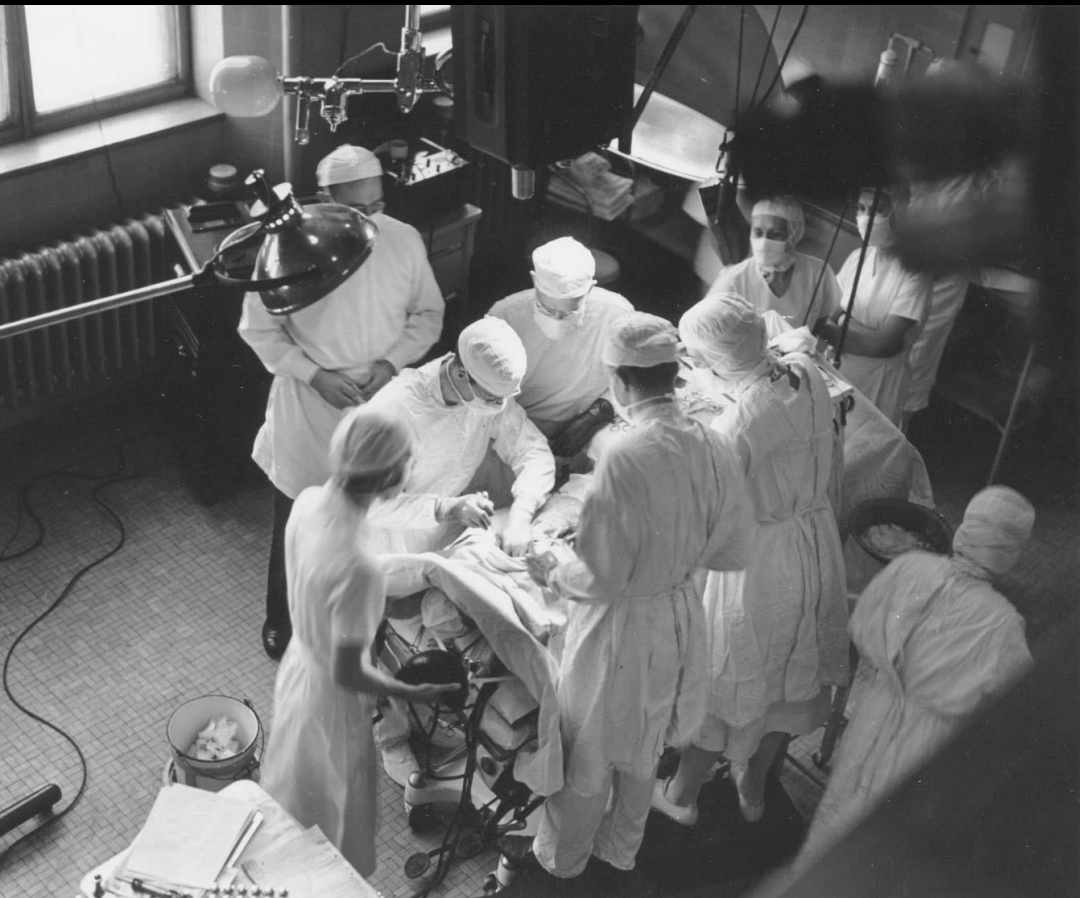
Dr. A. Blalock and
his team

connected to the left pulmonary artery. This allows blood to flow to the lungs to pick up oxygen. © 2004 - Duplication not permitted



Tetralogy of Fallot

Blalock-Taussig Shunt in 1944



Blalock Taussig-Thomas Shunt

Dr. A. Blalock and
his team: Nov 29, 1944

connected to the left pulmonary artery. This allows blood to flow to the lungs to pick up oxygen. © 2004 - Duplication not permitted

Eileen Saxon





The Forgotten Heroes

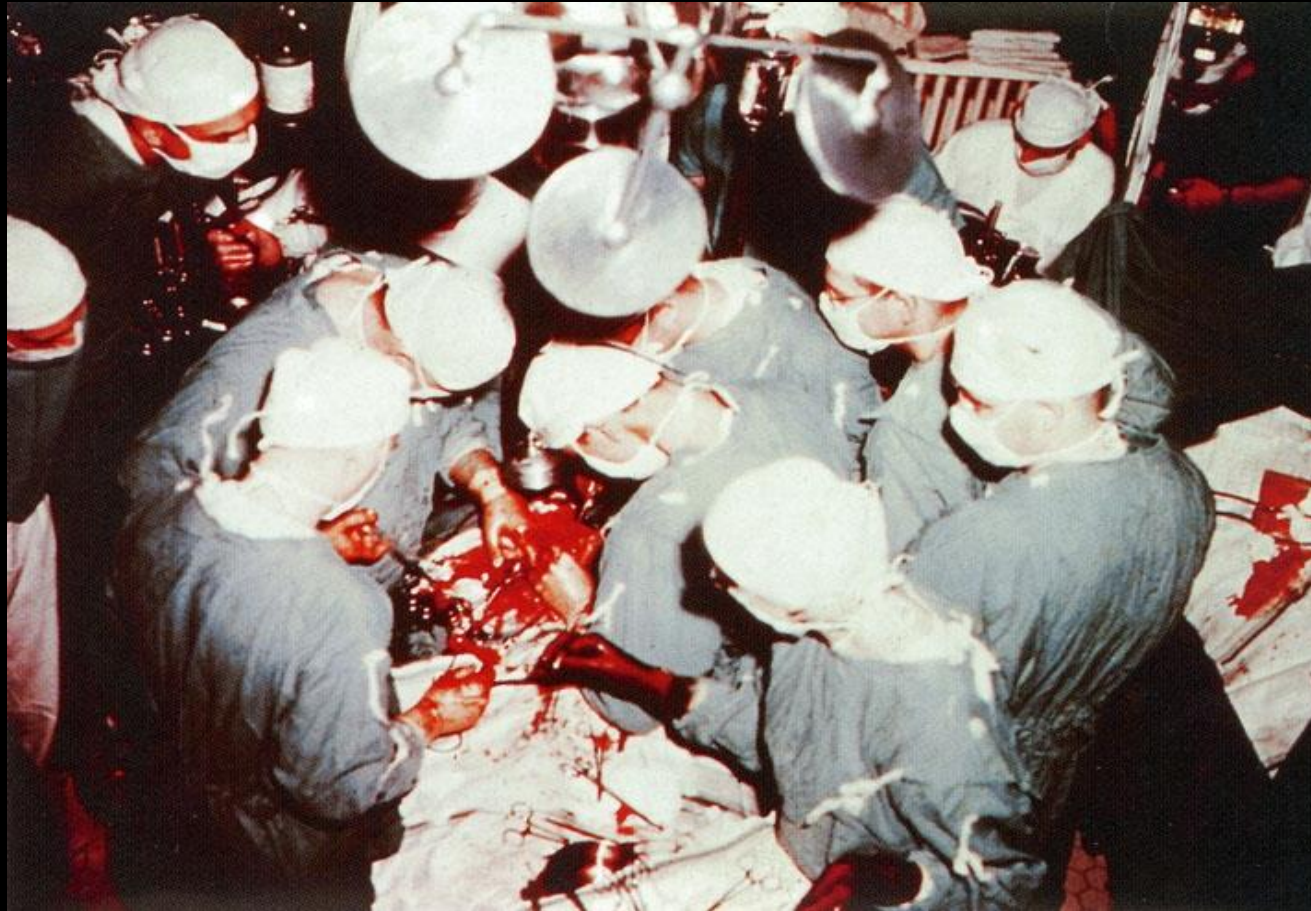


YOU



C.W. Lillehei, Minneapolis, USA: First Tetralogy of Fallot Repair

August 31,
1954



Cross-
Circulation

Courtesy of Dr. W. Williams



The Forgotten Heroes



YOU

YOUR PARENTS

ACHD Is An Epidemic

- The *demographics* of CHD population have changed:
 - Increasing number of adults with CHD
- *Distribution* of CHD:
 - Prevalence of pts with *severe CHD* is increasing more rapidly in adults than in children
 - Equalizing numbers of adults and children with severe CHD



Summary

- *Mortality and morbidity are shifting* away from the young and towards the adult
- *Workload* is increasing



Impact on Health Care System!



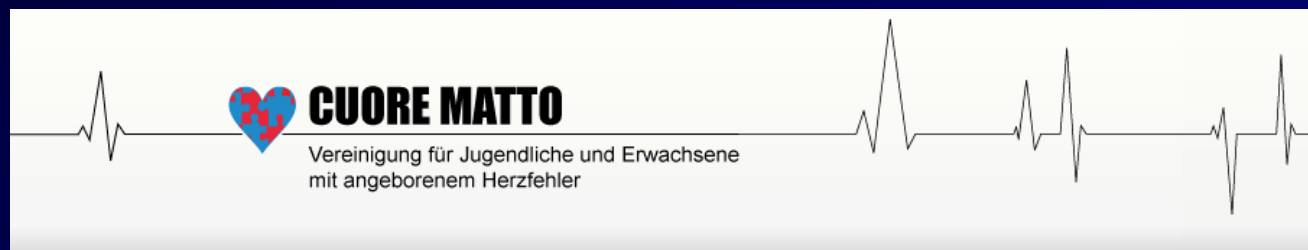
Summary

- Validation of the investment made during childhood
- Ethical responsibility to provide care for patients born with congenital defects





TO TAKE OWNERSHIP



TO MAKE A DIFFERENCE



Acknowledgment: *Our Forgotten Heroes*

- Patients and their parents

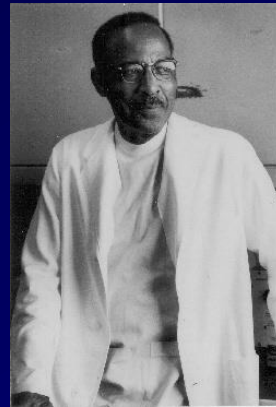


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- Patients and their parents



- Vivien Thomas
(1910 – 1989)





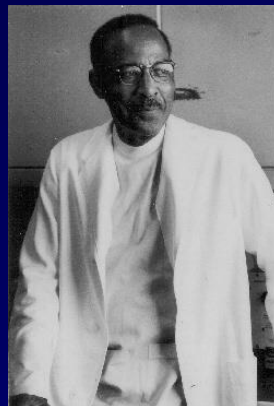
Acknowledgment: *Our Forgotten Heroes*



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(1910-1989)



- Everybody who makes a difference for
his / her peers

