

CARDIOLOGY  
2025 

# A Tale of Two Cities:

175 Years of Hope  
and Healing

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HEART  
AND LUNG



HOPE. HEAL. LEARN.



# No Disclosures



# A Tale of Two Cities

London and Paris

**Charles Dickens**

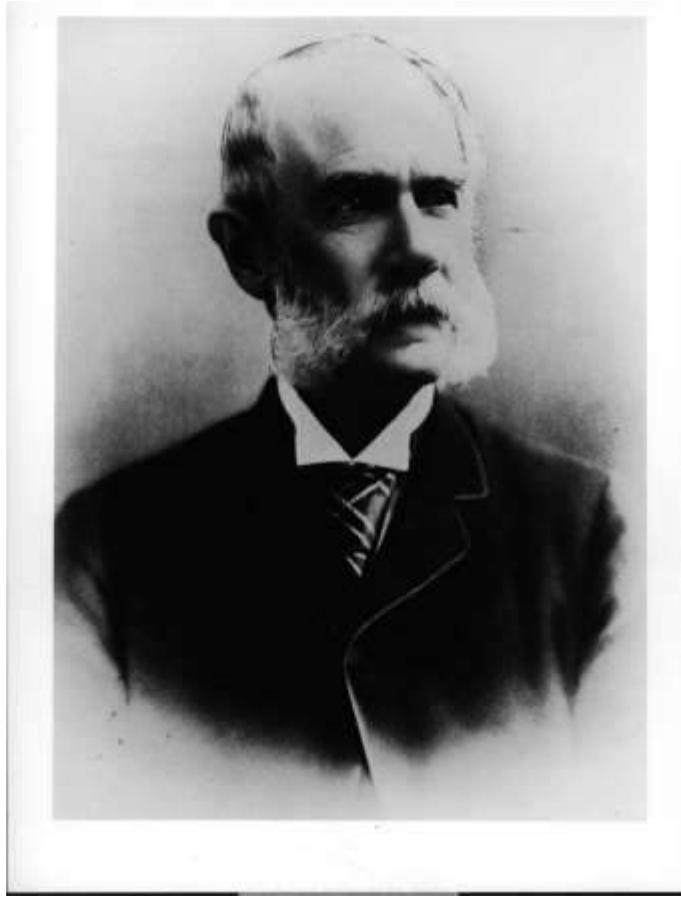
**1859**

## LONDON: Dr Charles West

- 1833 - Medical training at St Bartholomew's Hospital (Barts-founded 1123)
- 1835-37 Travelled Europe - Bonn, Paris and Berlin
- Paris - Hospice des Enfants Trouves (an orphanage) became Hopital des Enfants Malades in 1802
- The Foundling Hospital (one street from Great Ormond Street) founded 1739 in Georgian London
- Fought for 10 years to set up a Hospital for Sick Children in Victorian London
- 14<sup>th</sup> February 1852 - 49 Great Ormond Street opened its doors – 10 beds



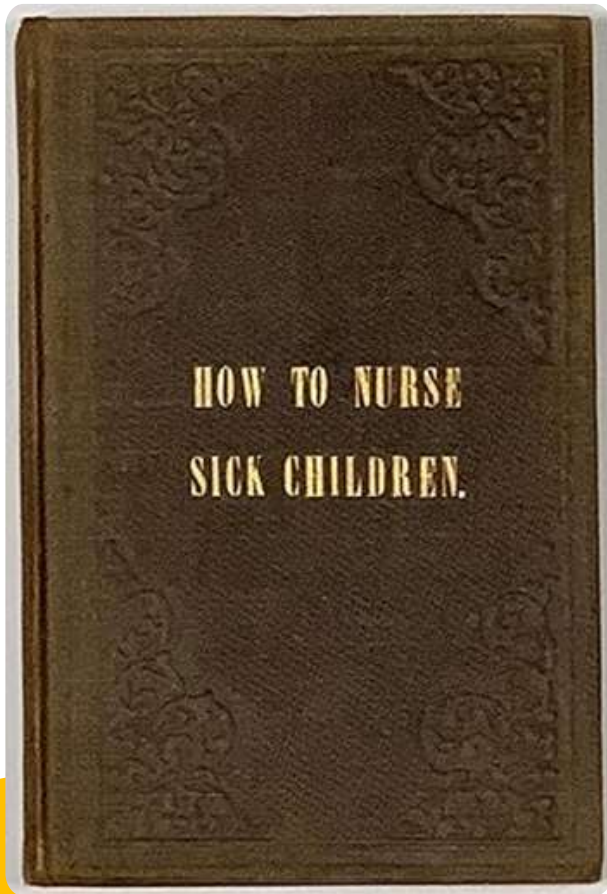
**HOPE**



**HOPE**

## **Philadelphia: Dr Francis West Lewis**

- 1853 Dr Francis West Lewis crossed the Atlantic Ocean
- Visited the new Hospital for Sick Children at Great Ormond Street
- Returned inspired by Dr Charles West.
- **1855 - Children's Hospital of Philadelphia opened** in a converted house on Blight Street
- 12 in-patient beds.



## Learn

- Charles West and Florence Nightingale were contemporaries and mention each other in their writings
- Dr Charles West wrote a small book 'How to Nurse Sick Children' (1854)
  - Nurses know their patients best
  - Observation skills paramount to care
  - Children need their parents and toys
  - Parents are anxious and not always good humoured
  - 1st US Edition (1855) \$1,045

# Charles Dickens: Benefactor



*A hospital ward in 1858,  
from an Illustrated Times of April 1858*

## “Our Mutual Friend” (1864/5)

Mr Rokesmith advises that Johnny is a very sick boy:

- to move to a place where there are none but children
- a place set up on purpose for sick children
- where the good doctors and nurses pass their lives with children
- talk to none but children
- touch, comfort and cure none but children

**Is there really such a place?**



# “Hope Lives Here”

Re-builds in London -----

and Philadelphia (1866)



1875 added  
to 1893



1937




1916



1974  
onwards





## London: Cardiothoracic Unit opens 1947

- First Heart and Lung Unit established
- Integrated Medical and Surgical Unit
- Joint Cardiac Conference
- Dr Richard Bonham-Carter and Mr David Waterson
- The 'plumber and his mate'



# Healing - Developments at Great Ormond Street

**1944** Blalock-Taussig-Thomas shunt

**1954** Dr Gerald Graham from USA to develop Cardiac Catheterisation

**1962** Waterston Shunt

**1962** First Bypass machine at GOSH – 5 years painstaking research

**1964** 50 children/year Bypass surgery - 60% survival

**1974** ECHO



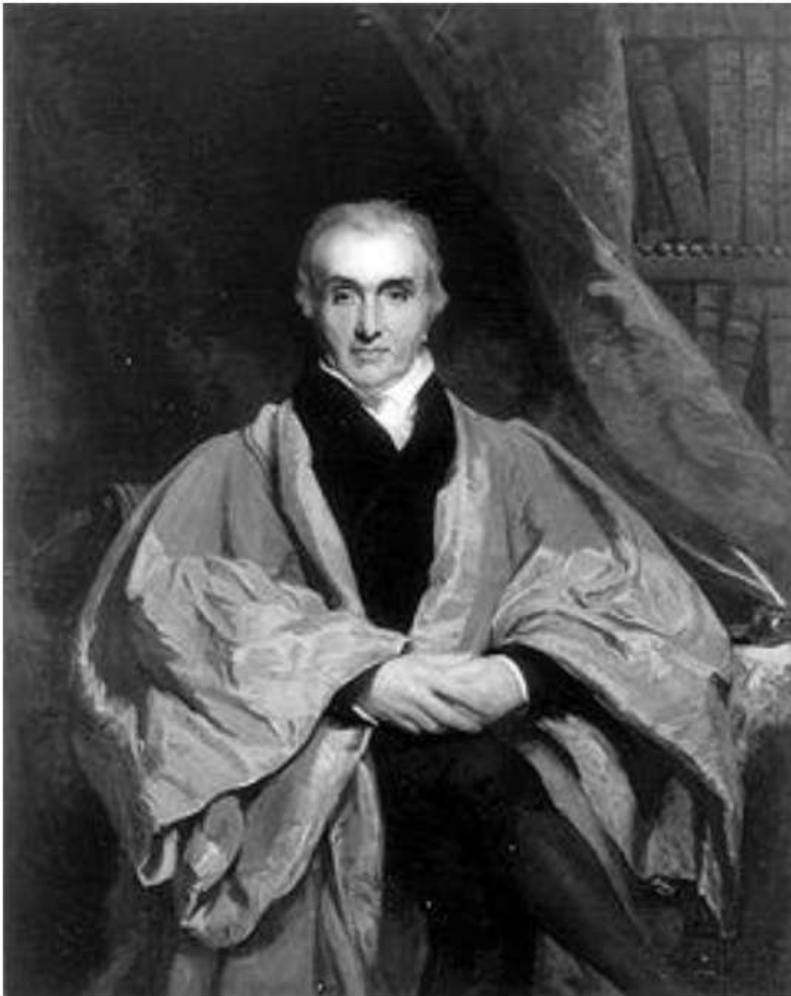
# Purpose-built Cardiothoracic Unit 1963





# Healing - Transposition of the Great Arteries – a Reflection

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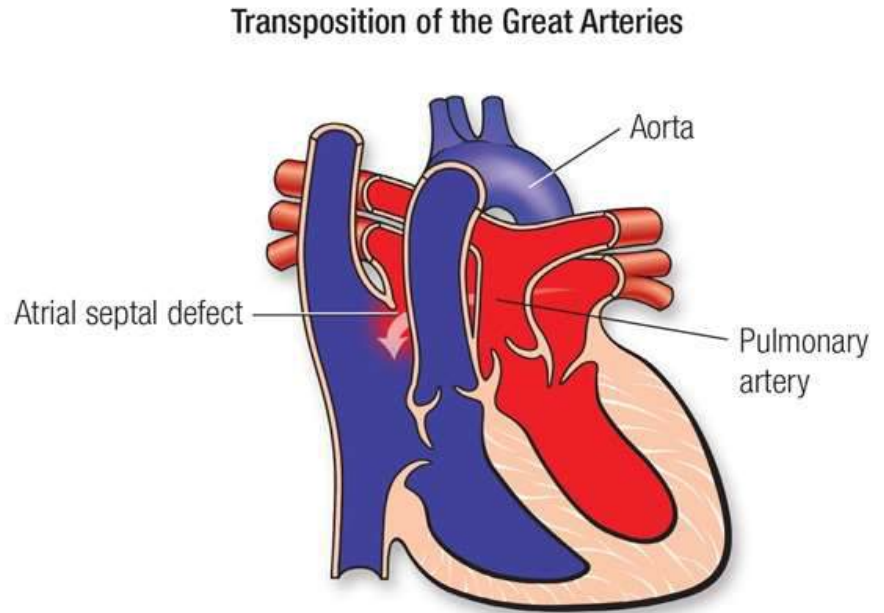


## Dr. Matthew Baillie 1793

- Recognised that there were “blue babies” with a poor natural history & no surgical option
- TGA identified together with:  
*“Morbid Anatomy of Some of the Most Important Parts of the Human Body”*

# Transposition of the Great Arteries

- 5% of CHD
- Most common neonatal cyanotic CHD
- More prevalent in boys 3:1
- Untreated - 30% die in the first week of life
- Untreated - 90% die within the first year of life





## 1950's/60's

- No fetal diagnosis
- No ECHO
- No Advanced Clinical Practitioners
- No Prostaglandin infusions
- No surgery for TGA
- No interventional cardiology
- No CT/MR
- No Pulse Oximetry
- Lab results 2-3 hours
- Survival of the fittest



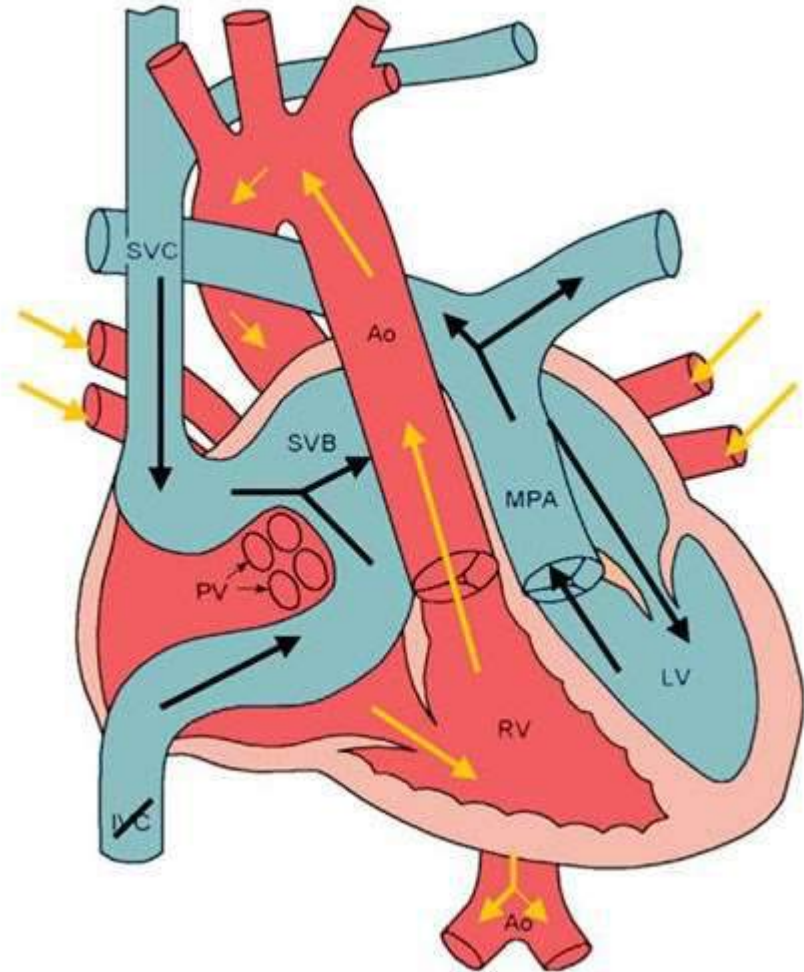
## Surgery for TGA

“Atrial redirection of blood”

Procedures:

Senning (1957)

Mustard(1963)



# 'Philadelphia Rashkind' Procedure 1966

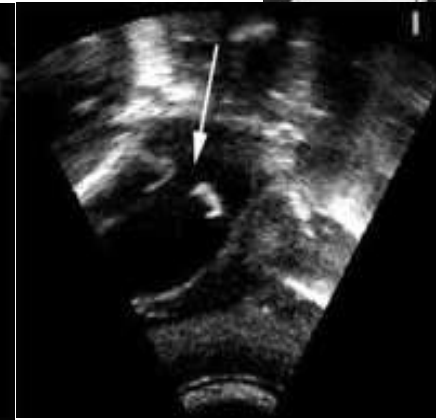
## Balloon Atrial Septostomy



Balloon inflated  
in Left Atrium

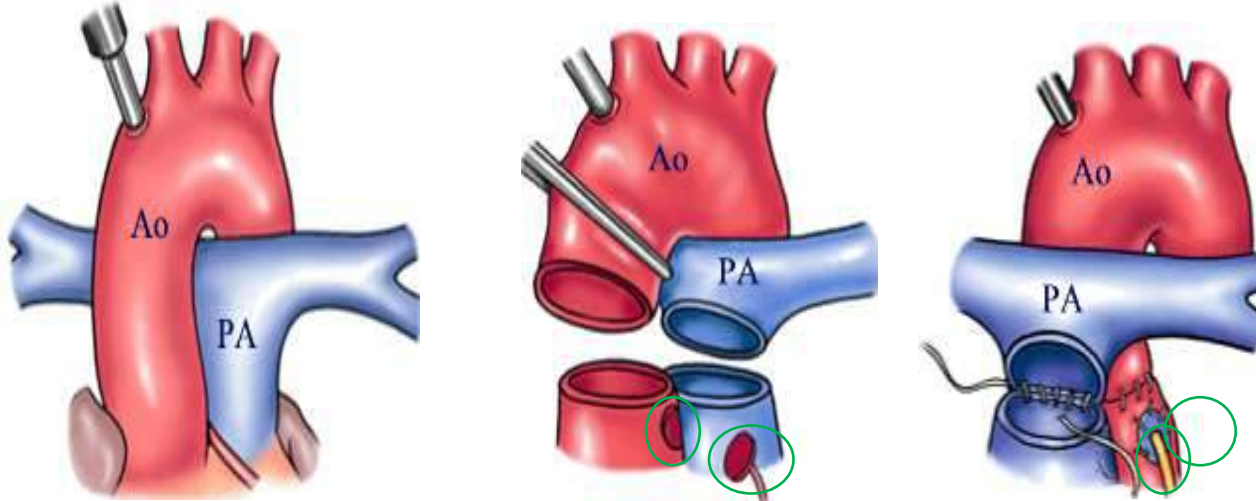


Balloon pulled  
through into the  
Right Atrium



Enlarged PFO

# Arterial Switch Operation (Jatene 1975)



Initial high mortality rate – Ethical challenges

# Post-operative

## “Corrective”

- Revolutionary
- Technically challenging
- Neonate on Cardio-Pulmonary Bypass
- Inflammation ++ (Systemic Inflammatory Response Syndrome [SIRS])
- Delayed sternal closure is not uncommon
- Surgical/CPB techniques improving
- ECMO support invaluable now



# Prognosis

- Excellent
- Low mortality
- PA stenosis/aortic regurgitation
- Life long follow up
- Represents an incredible success in neonatal cardiac surgery





# Learn:

Near-miss incidents

Metrics Data

No-Blame Culture

Human Factors

Training

Swiss cheese model

Aerospace and

Formula 1 parallels

## Analysis of a cluster of surgical failures: Application to a series of neonatal Arterial Switch operations

de Leval et al. (1994)

- 104 neonatal arterial switch operations for transposition June 1987 and February 1993
- one death in the first 52 patients
- cluster of deaths/near-misses
- Risk factor analysis of all aspects of care
- retraining
- established continuous monitoring of associated near- miss events – bleeding, renal failure, arrhythmias, chylothorax, cardiac arrest, ECLS, neurological incidents
- weekly clinical governance meetings

[Human factors and cardiac surgery: a multicenter study \(2000\)](#)

# 1975 - GOSH was awarded the Children's Hospital of Philadelphia's Gold Medal for services to Paediatrics



## Charter for the Advancement of Children's Health

**T**he Hospitals for Sick Children, Great Ormond Street, London, and The Children's Hospital of Philadelphia, two pioneering institutions for child care, reiterate themselves to the immune principles which governed their founding as the first instruments for the betterment of child health and development in the English-speaking world and to these high objectives:

**T**o advance knowledge of the child's growth and development to the threshold of adult life, and to achieve a comprehensive continuity of care;

**T**o identify in childhood (inherited, environmental, nutritional, and other factors which adversely affect the health of children and also predispose the child to the major causes of death in adult life;

**T**o avoid new knowledge and clinical medicine into an ever more productive future, reducing the lag between scientific findings and their application to the afflicted child;

**T**o devote attention to areas of medical-social concern equal to that which we apply to the physiologic life of our children;

**T**o bring about alleviation of all environmental ills, (including child neglect and child abuse, through aggressive attack on their causes, mobilizing relevant governmental, social, legal, and educational agencies to prevent these disorders;

**T**o accelerate advances in early diagnosis through research in clinical pharmacology, genetics, molecular biology, and biochemistry for the identification, treatment or prevention of physical and mental birth defects and life-threatening disorders;

**T**o recognize at the earliest possible age the needs of deprivation, whether parental, nutritional, or cultural, and to endeavor to promote early emotional and physiological equilibrium of the infant or child, so as to maintain and advance the mental health of each individual;

**T**o every child, whether physically or intellectually handicapped, improve the quality of life up to his or her highest capabilities;

**A**nd continually to heighten the medical excellence which has helped to maintain the physical and intellectual vigor of the children of the English-speaking world.

The Hospitals for Sick Children  
Great Ormond Street London

The Children's Hospital  
of Philadelphia



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Thank you



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