Congenital Heart Defects

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Categories of Heart Defects

- Left-to-right shunt
- Cyanotic heart defects
- Obstructive heart defects
L→R: Atrial Septal Defect
L→R: Atrial Septal Defect

- Small defect usually no problem
- Large defects ↑ blood flow to lungs
  - ↑ c. o. 2 - 4 X → ↑ workload for the heart
- Presentation: ↑ h. r. & contractility, diaphoresis, huff & puff, poor suck
- Shortened life span if uncorrected
- ASD closed ~ 5 years of age
L→R: Ventricular Septal Defect
L→R: Ventricular Septal Defect

- Large defect → ↑ R V pressures
- May do well for several weeks due ↑ PVR (compensated heart failure)
- As PVR ↓, ↑ L→R shunt (uncompensated heart failure)
- Fail to gain weight → thin, large stomachs
- Develop pulm edema & die
L→R: Patent Ductus Arteriosus
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- Common in premature infants < 33 weeks
- Medical management
  - First 48 hours
    - Fluid restriction
    - Lasix (furosemide)
  - Indocin (indomethacin)
  - NeoProfen (ibuprofen lysine)
- Surgical: ligation of ductus
$L \rightarrow R$: Endocardial cushion defect
**L→R: Endocardial cushion defect**

- Atrial & ventricular septal defect
- Common A-V valve
- Large L →R shunt
- Operation at 8 weeks
- 50% of Down’s babies have heart defect
  - 1/3 have this defect
  - 1/3 have VSD
  - 1/3 have very complicated defect
Cyanotic Heart Disease: Characteristics

- Insufficient blood to lungs
- Blue blood mixes with limited oxygenated (red) blood going to the body
Cyanotic: Truncus Arteriosus
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- Aorta & PA have not separated
- Large L → R shunt
- Heart can fail esp. with exercise
- 25% mortality even with surgery
- Life expectancy to teens & twenties
Cyanotic: Tetrology of Fallot
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- Most common of cyanotic defects
- Blue for two reasons
  - Not getting blood to lungs
  - Blue blood goes out the aorta
- Four defects:
  - VSD
  - Valvular & infundibular pulmonic stenosis
  - RV hypertrophy
  - Overriding aorta
Cyanotic: Tetrology of Fallot

- Treatment
  - Give prostaglandin E
  - Create shunt: systemic to pulmonary artery (Blalock-Taussig is most common)
  - Corrective: 3 to 4 months of age
    - Enlarge pulmonary artery opening
    - Close VSD
Cyanotic: Transposition of the Great Arteries

- VSD & PDA allow mixing
- Palliative treatment - balloon atrial septostomy
- Corrective
  - Mustard: creates baffles in atria to redirect bloodflow
  - Arterial switch (Jatene procedure)
Cyanotic: Transposition of the Great Arteries
Cyanotic: Tricuspid Valve Atresia

- Bloodflow: RA → LA → great arteries
- Blood through lungs
  - VSD
  - PDA
  - Bronchial vessels
- Left ventricle pulls blood through the lungs
Cyanotic: Tricuspid Valve Atresia
Obstructive Defects

- Valvular aortic stenosis
- Valvular pulmonary stenosis
- Coarctation of the aorta

- All increase ventricular workload
Obstructive - Coarctation of Aorta