

Common Cardiac Disorders



Joe Langton

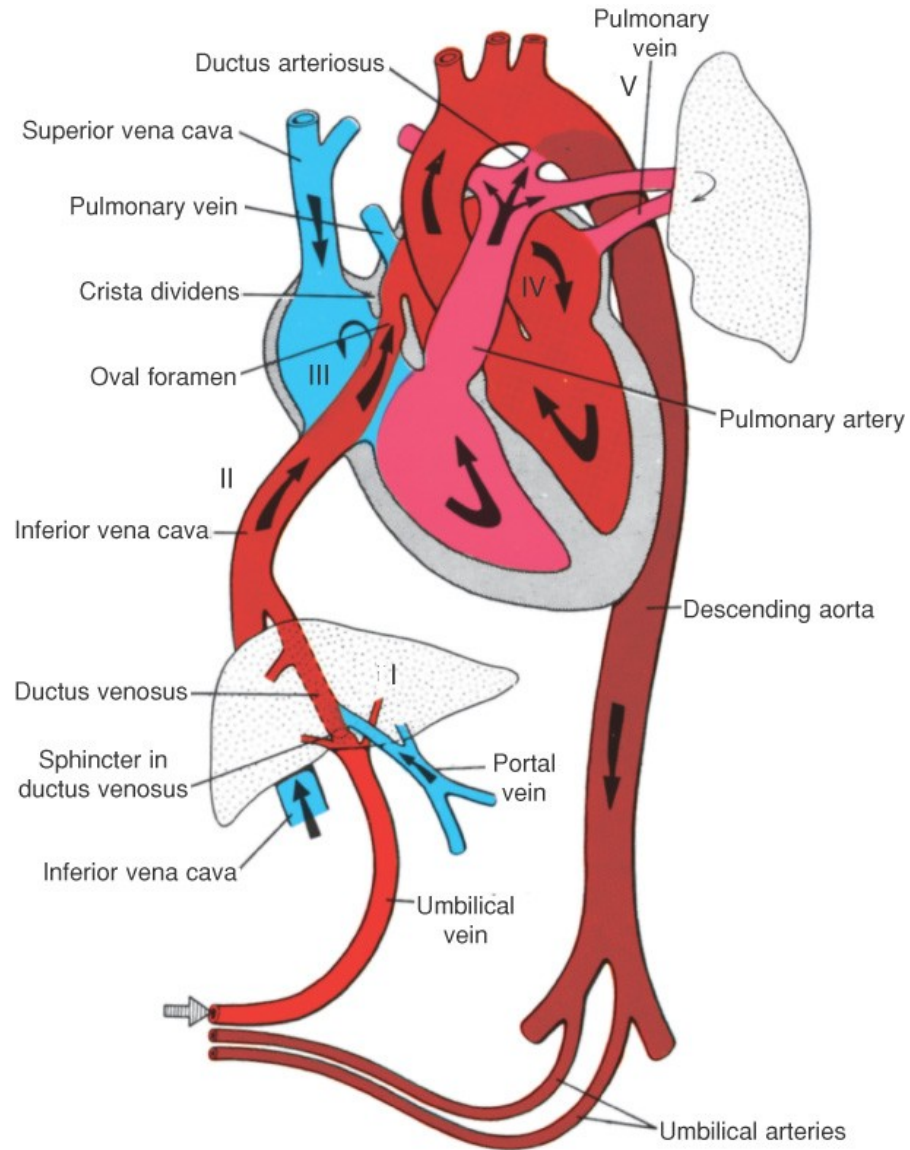
Aims

- Introduction to common cardiac disorders

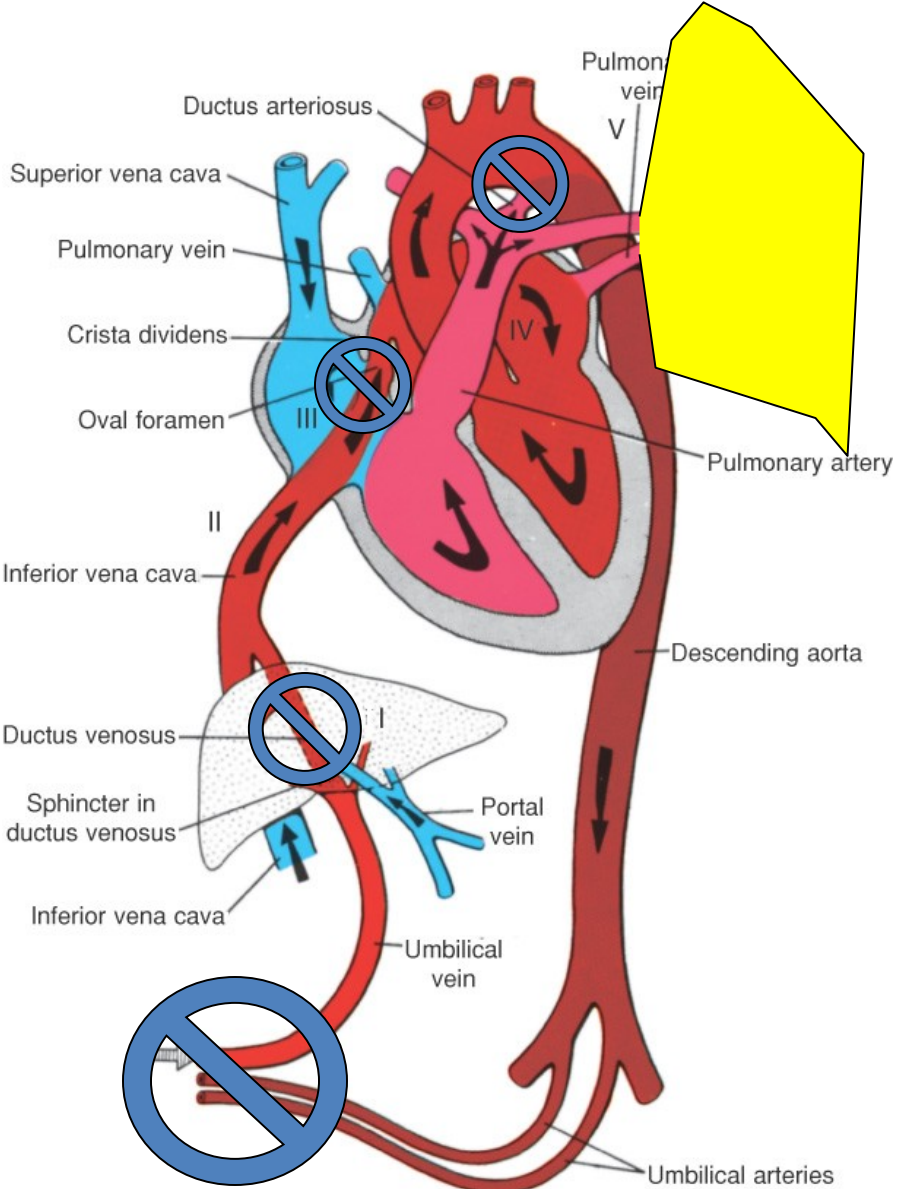


- Foetal → adult circulation
- Acyanotic & cyanotic heart disease
- Acquired heart disease

Foetal Circulation



After Birth



Causes of paediatric heart problems

- Congenital defect
- Error in the transition from foetal to adult circulation
 - Structurally normal heart
- Disease process (often infective) damages the previously normal heart

What congenital heart defects can you think of?

| Abnormality | Conditions |
|--------------------------------|---|
| Septal defect | VSD ASD AVSD |
| Vessel abnormalities | Transposition of great arteries Coarctation of the aorta |
| Valve abnormalities | Mitral stenosis Pulmonary stenosis Tricuspid atresia |
| Major structural abnormalities | Tetralogy of fallot Hypoplastic left heart |
| Failure of transition | PDA Persistent foetal circulation |

Acyanotic vs. Cyanotic

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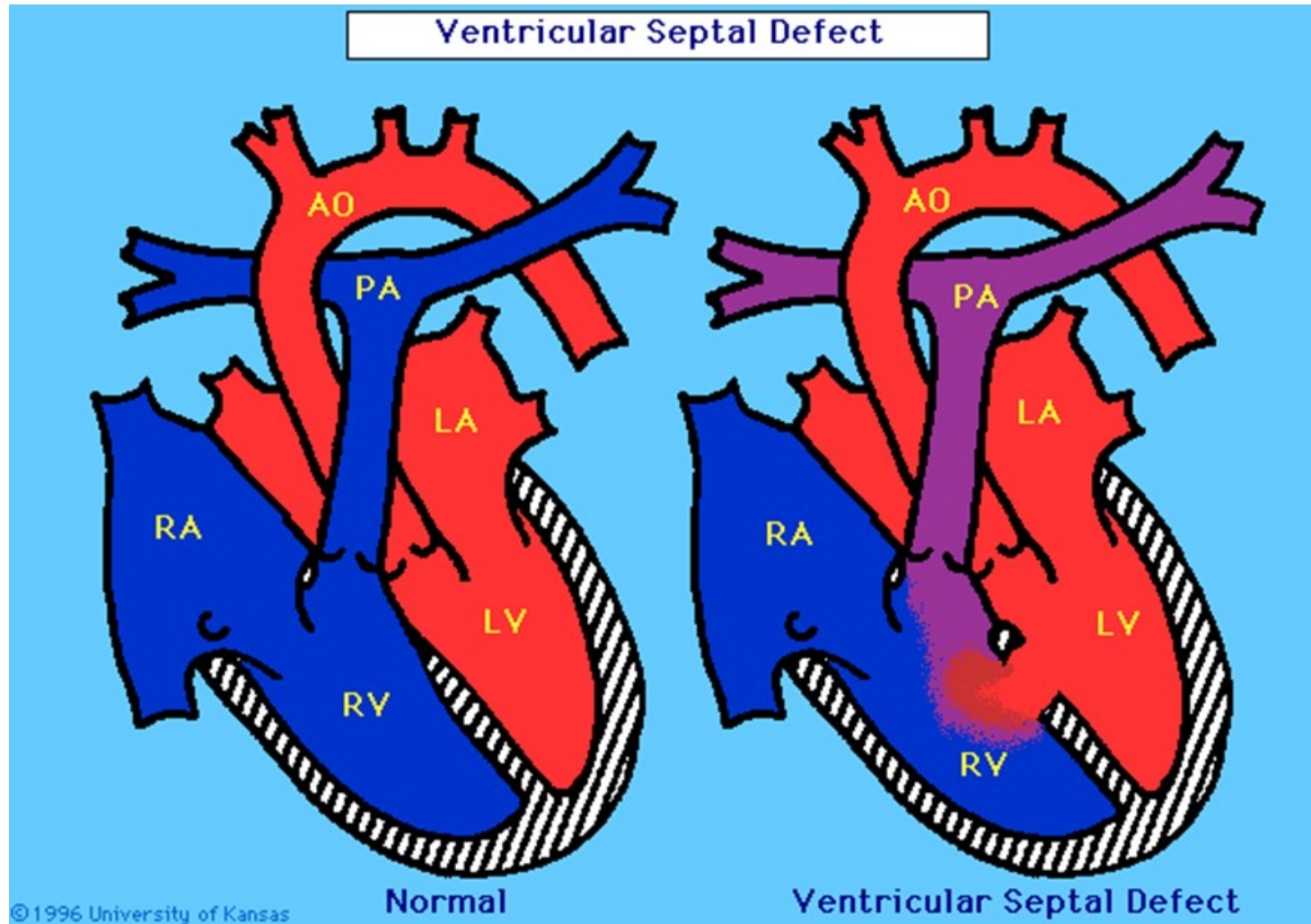
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Acyanotic heart disorders



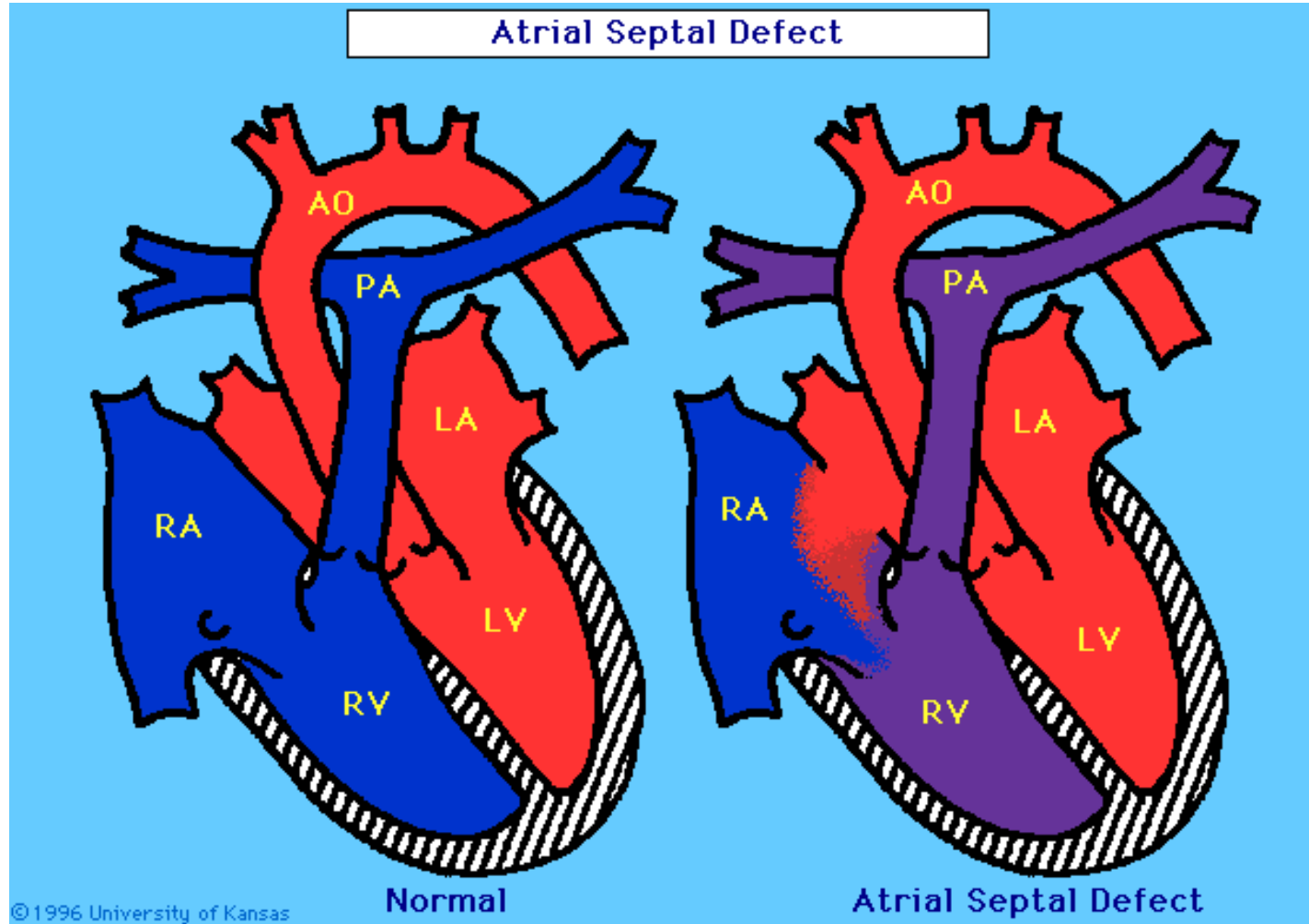
VSD



VSD

- A connection between the 2 ventricles
 - Left → right blood flow
- Harsh pansystolic murmur (LLSE)
- The bigger the hole, the quieter the murmur
- Commonest cause of heart failure in infancy
- 60% will close spontaneously
 - Some never close → surgery
- Medical Treatment

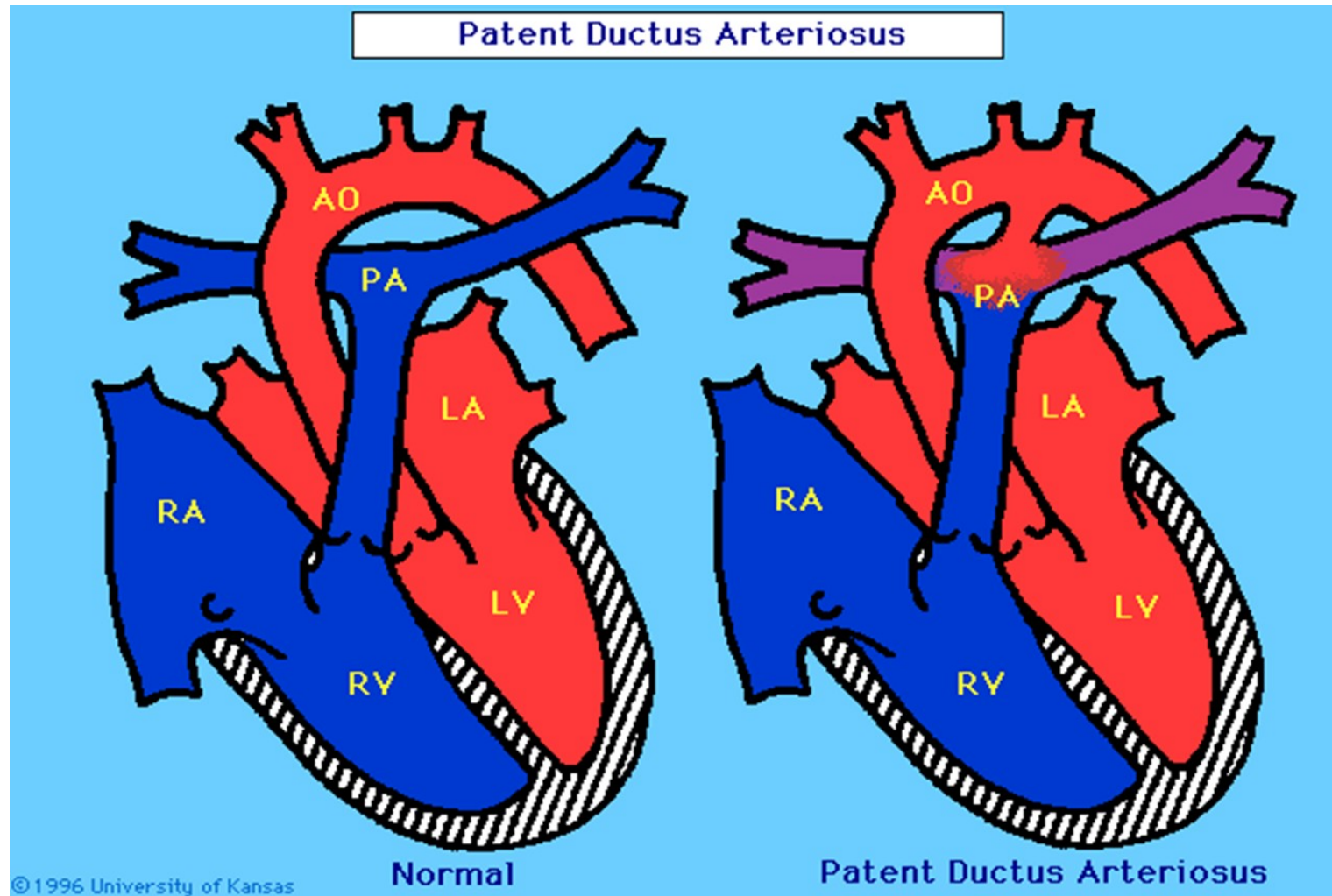
ASD



ASD

- A connection between the 2 atria
 - Left → right blood flow
 - Over loaded right side of the heart
- Most children will be asymptomatic
- Ejection systolic murmur (Pulmonary area)
- CXR – Cardiomegaly, large pulmonary artery, pulmonary plethora, small aorta
- Medical management

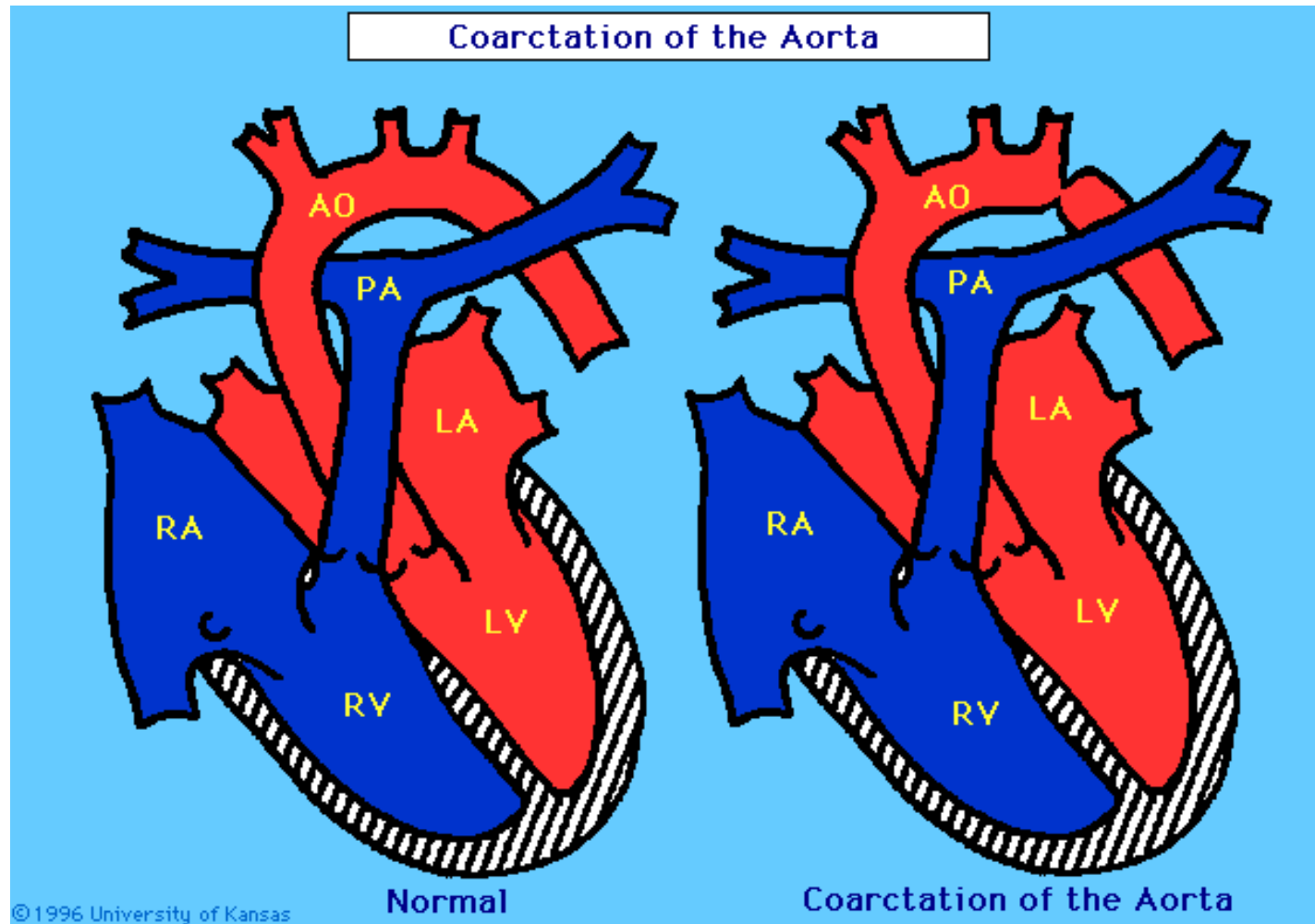
PDA



PDA

- Failure to close ductus arteriosus >1/12 of age
 - Blood in aorta diverted to pulmonary circulation
- 'Machinery' murmur below (L) clavicle
- Medical Management
 - Treat heart failure
 - Antibiotic prophylaxis
- Treatment = surgical ligation of duct

CoA



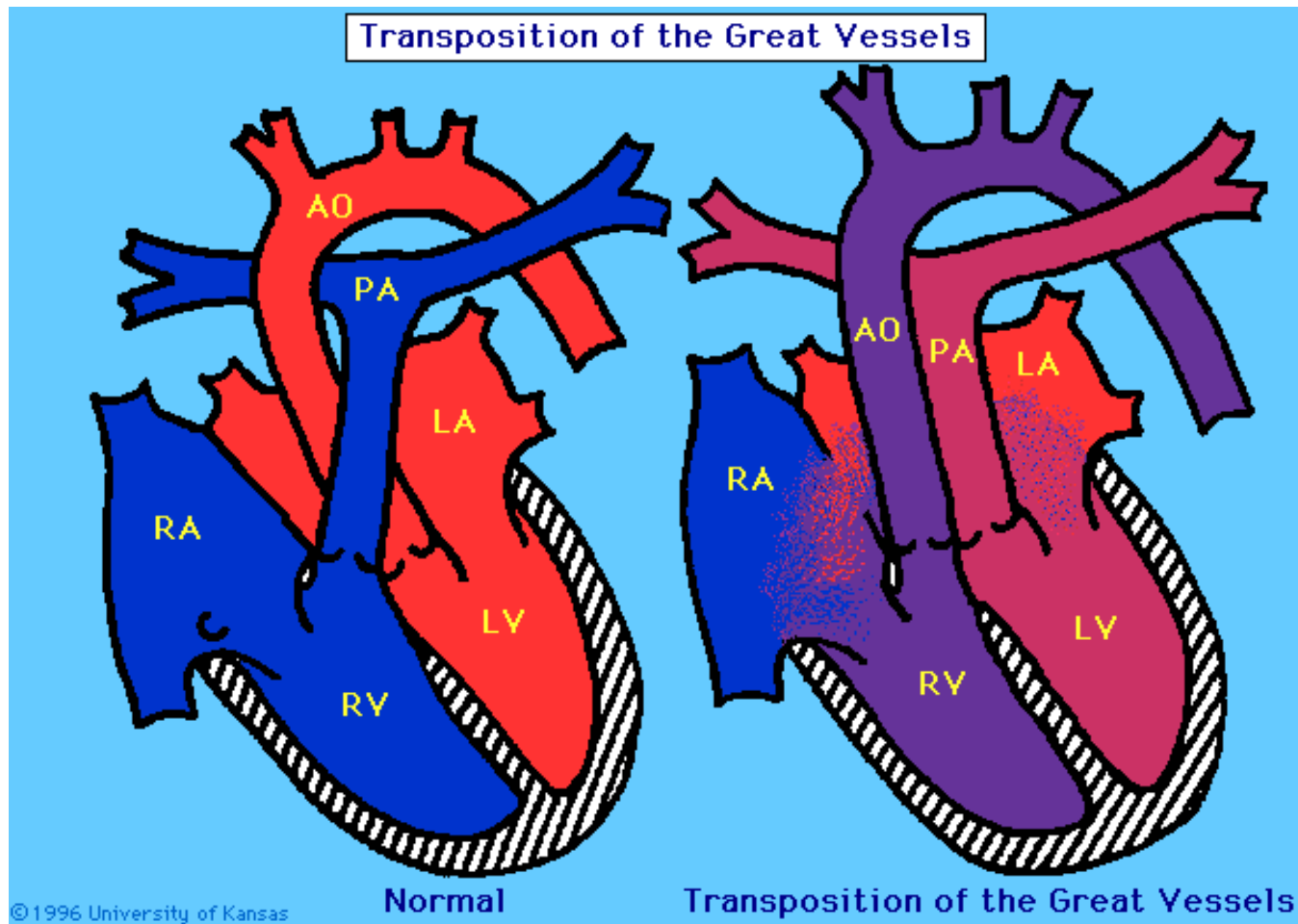
CoA

- A narrowing in the aorta
- If this is before the point at which the ductus arteriosus joins the baby will present collapsed in heart failure
- Can survive into adult life without knowing they have it
- Reduced or absent femoral pulses
- Systolic murmur
- Medical Management

Cyanotic heart disorders



TGA



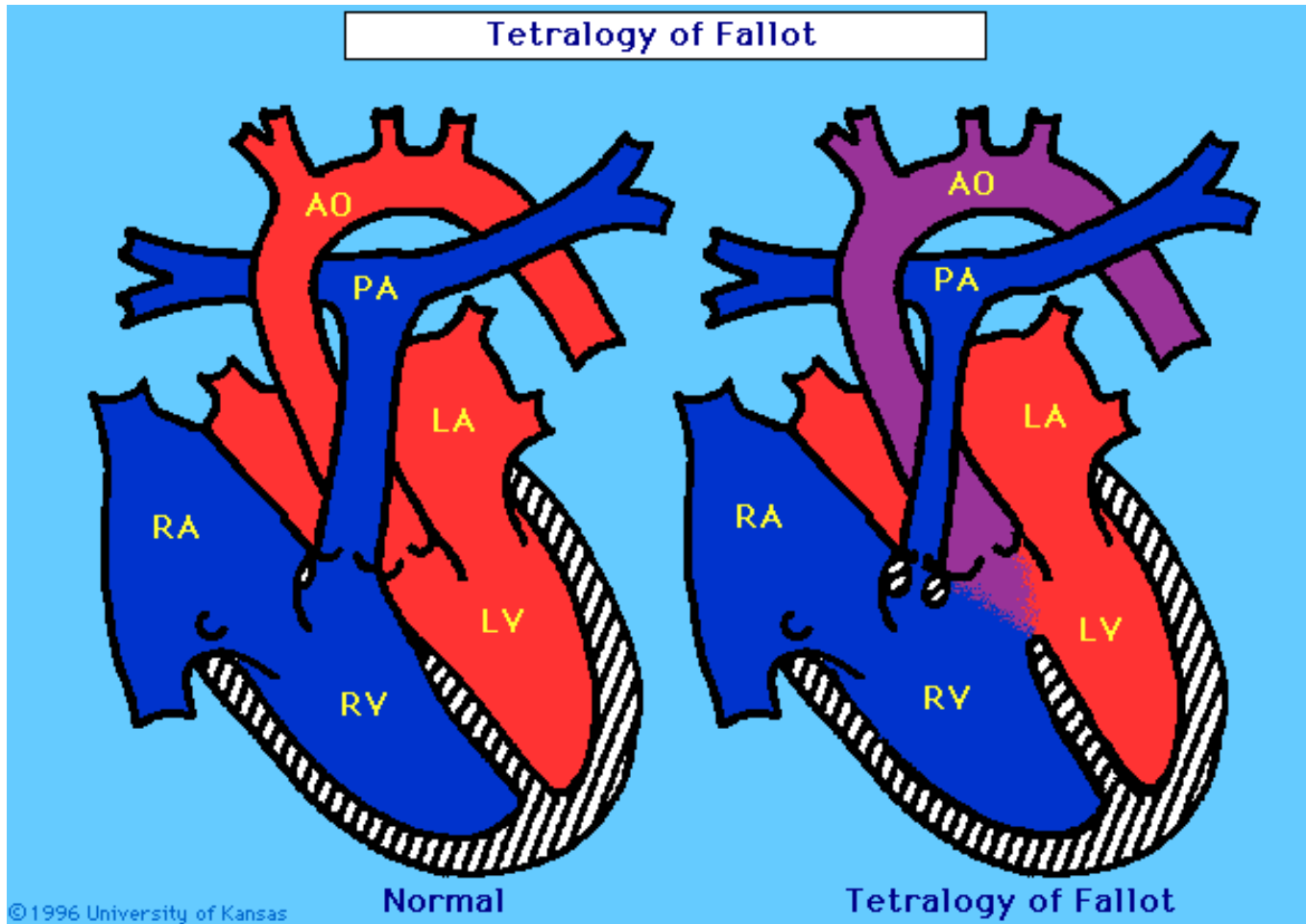
TGA

- RV → aorta & LV → pulmonary artery
- Pulmonary & systemic circulations function in parallel, rather than in series
- Oxygenated pulmonary venous blood returns to the LA & LV but is re-circulated to the pulmonary vascular bed via the abnormal pulmonary arterial connection to the left ventricle
- Deoxygenated systemic venous blood returns to the RA & RV where it is subsequently

ToF – What are the 4 components?

1. Pulmonary Stenosis
2. Right ventricular hypertrophy
3. 'Perimembranous' VSD
4. Overriding Aorta

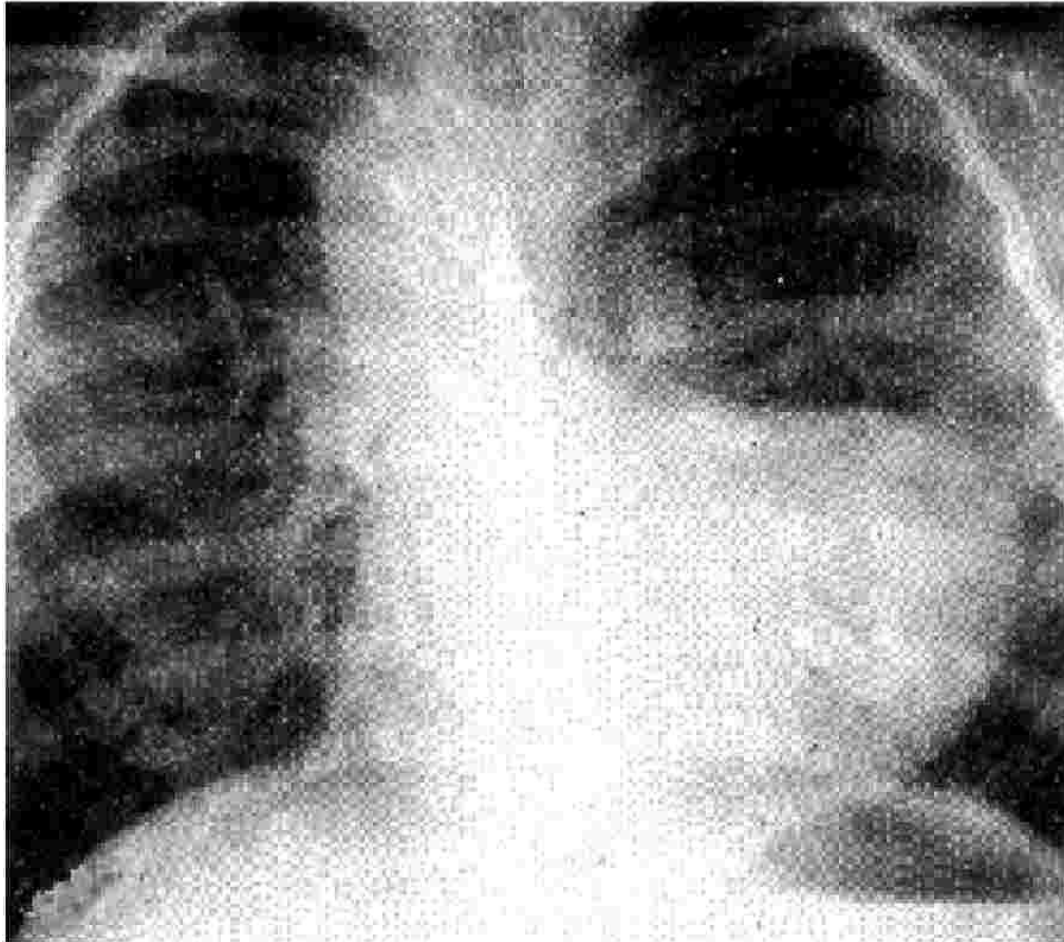
ToF



ToF

- Usually presents in infancy/early childhood
- Cyanosed
 - The child may be noted to be dusky from early life
 - Gradually increasing over time
- Hyper-cyanotic spells
- Polycythaemia
- Ejection systolic murmur (PS)
- CXR

ToF



CXR shows 'boot shaped heart'

ToF

- ECHO → definitive diagnosis
- Medical management includes
 - Antibiotic prophylaxis
 - ?Anticoagulation
- Definitive treatment is surgical

ToF

Hyper-cyanotic spells

- RV outflow obstruction ↑
- → pulmonary infundibular spasm
- Typically triggered by activity – feeding / playing
- Tend to last a few minutes & then resolve
- Older children may squat to terminate the spell
- ↑ exercise, agitation, tachycardia & pallor

ToF

Hyper-cyanotic spells - treatment

- Squatting / knee chest position
- Oxygen
- Morphine
- IV fluid bolus

Acquired heart disorders

Acute Rheumatic fever

- Abnormal immune response to Group A Strep
- Genetically susceptible individuals
- 6 – 16 yrs
- Symptoms occur ~ 3/52 after pharyngitis
- No definitive test
- Diagnosis is made using the Jones criteria

Acute Rheumatic Fever

Jones Criteria

Major criteria

- Carditis
- Migratory large joint polyarthrititis
- Erythema marginatum
- Subcutaneous

Minor criteria

- Previous history of RF
- Fever
- Arthralgia
- 1st degree heart block

Δ = evidence of recent Group A Strep infection (throat swab / ↑ ASOT)
& 2 major / 1 major & 2 minor

Acute Rheumatic fever

- Carditis (50%)
 - Follows arthritis
 - Severity inversely proportional to severity of arthritis
- Arthritis (75%)
 - Migratory
 - <1/52 each joint
 - Large joints
- Subcutaneous nodules
 - Rare unless chronic carditis
 - Extensor surfaces of large joints, spinous processes, occipital area
- Sydenham's chorea

Acute Rheumatic fever

Cardiac involvement

- Endocardium – valvulitis (MV, AV)
 - MR – apical pansystolic murmur
 - MS – apical mid-diastolic murmur
 - AR – early diastolic decrescendo murmur, wide pulse pressure if severe
- Myocardium – impaired cardiac function

Acute Rheumatic fever

Cardiac involvement

- Pericardium – pericarditis
 - Chest pain
 - Pericardial rub
- Usually asymptomatic
- Co-incidental finding whilst assessing

Acute Rheumatic fever

Management

1. Supportive & bed rest
2. Eradicate Strep infection
3. Aspirin 90-120mg/kg/day in divided doses
↓ dose to 2/3 when clinical response
when CRP / ESR normal taper aspirin over 2/52
4. Prednisolone 2mg/kg/day (max 60mg)
instead of aspirin if moderate – severe
carditis / pericarditis

Acute Rheumatic fever

Management of Strep

- Acute
 - Oral penicillin V
 - Benzathine penicillin
- On-going prevention
 - Monthly IM Benzathine penicillin
 - 0.6 MU if <27kg
 - 1.2 MU if >27kg

Rheumatic heart disease

- Permanent valve damage due to ARF
- Scarring & fibrosis of valves → rigidity, shortening, thickening, deformity, retraction, & fusion of cusps
- Typical presentation = heart failure

Rheumatic heart disease

- **MR**

- **Apical pansystolic murmur**
- **Displaced apex**

- **MS**

- **Apical mid-diastolic murmur**

- **AR**

- **Blowing diastolic decrescendo murmur wide pulse**

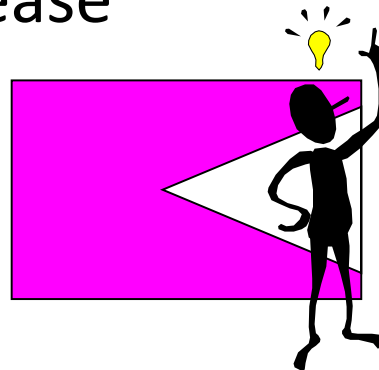
Rheumatic heart disease

Management

- Manage heart failure
- IM benzathine penicillin
 - Monthly
 - Prevent recurrent ARF
- Follow up with paediatric cardiologist

In Summary

- Foetal → adult circulation
- Acyanotic & cyanotic heart disease
 - VSD, TGA, ToF
- Acquired heart disease
 - Rheumatic heart disease



Thank you

