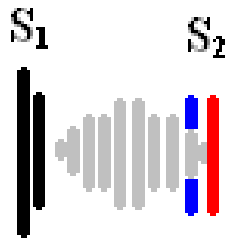


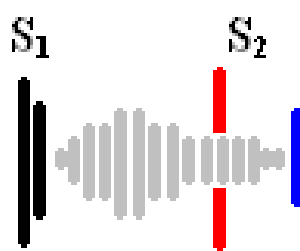
Interpretation of some abnormal Cardiovascular findings

Systolic murmurs

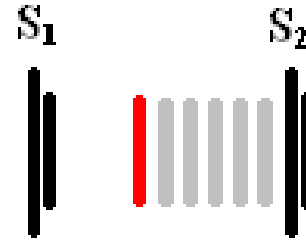
Aortic stenosis



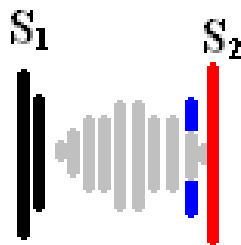
Pulmonic stenosis



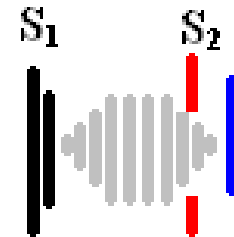
Mitral valve prolapse



HOCM



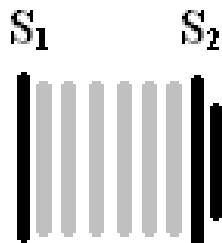
Atrial septal defect



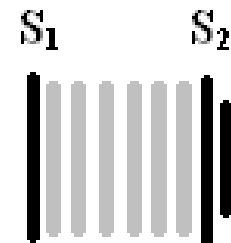
PDA



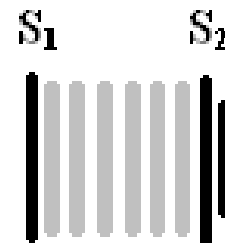
Mitral regurgitation



Tricuspid regurgitation



VSD



Diastolic murmurs

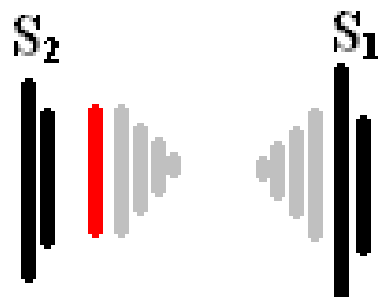
Aortic regurgitation



Pulmonic regurgitation



Mitral stenosis



Patent ductus arteriosus



Hyperoxic test. Repeating arterial blood gases while the patient breathes 100% oxygen helps separate cardiac causes of cyanosis from pulmonary or central nervous system causes.

Hyperoxia test results in neonates with cyanosis

	PaO ₂ (percent saturation) when FiO ₂ = 0.21		PaO ₂ (percent saturation) when FiO ₂ = 1	PaCO ₂
Normal	>70 (>95)		>300 (100)	35
Pulmonary disease	50 (85)		>150 (100)	50
Neurologic disease	50 (85)		>150 (100)	50
Methemoglobinemia	>70 (<85)		>200 (<85)	35
Cardiac disease				
Parallel circulation*	<40 (<75)		<50 (<85)	35
Mixing with reduced PBF [¶]	<40 (<75)		<50 (<85)	35
Mixing without restricted PBF ^Δ	40 to 60 (75 to 93)		<150 (<100)	35
	Preductal	Postductal		
Differential cyanosis [◇]	70 (95)	<40 (<75)	Variable	35 to 50
Reverse differential cyanosis [§]	<40 (<75)	>50 (>90)		

PaO₂: partial pressure of oxygen; FiO₂: fraction of inspired oxygen; PaCO₂: partial pressure of arterial carbon dioxide; PBF: pulmonary blood flow.

* D-transposition of the great arteries with or without ventricular septal defect.

¶ Tricuspid atresia with pulmonary stenosis or pulmonary atresia, pulmonary atresia or critical pulmonary stenosis with intact ventricular septum, tetralogy of Fallot.

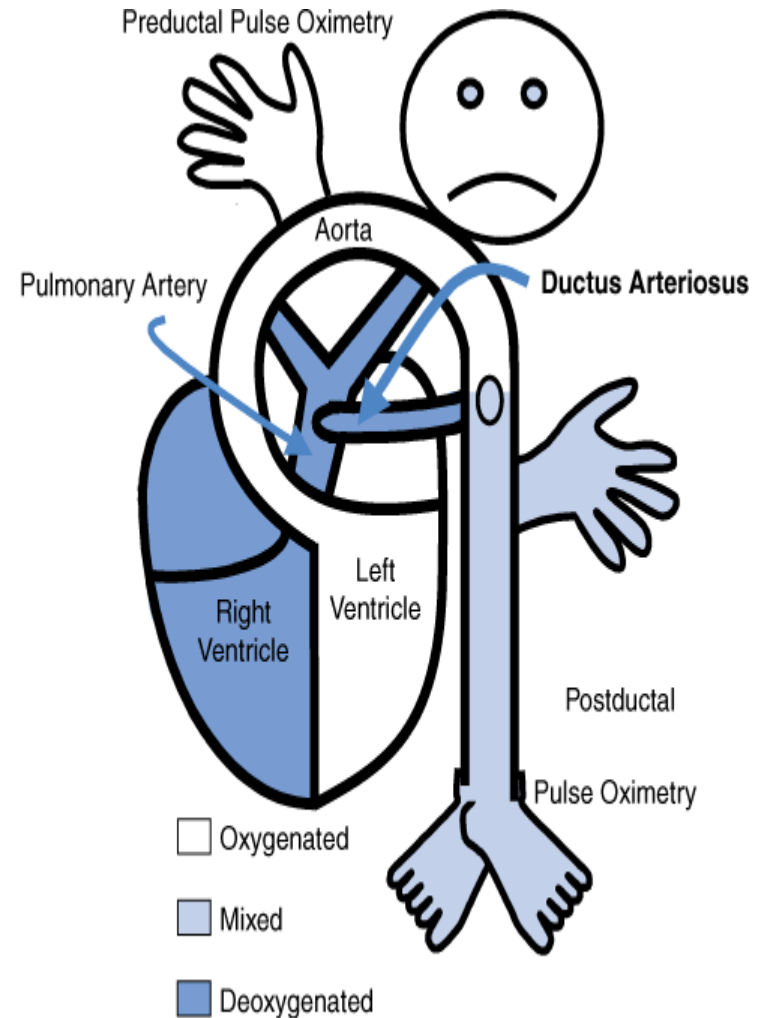
Δ Truncus arteriosus, total anomalous pulmonary venous connection without obstruction, hypoplastic left heart syndrome, single ventricle without pulmonary stenosis or pulmonary atresia.

◇ Persistent pulmonary hypertension of the newborn, interrupted aortic arch, severe coarctation.

§ D-transposition of the great arteries associated with either coarctation or suprasystemic pulmonary vascular resistance.

Oximeter probes can be placed on preductal (right hand) and postductal (feet) sites to assess for right-to-left shunting at the level of the foramen ovale and ductus arteriosus

- **A difference of o2 sat greater than 3% between preductal and postductal oxygen saturations –is abn.**
- **A difference of o2 sat greater than 10% or PaO2 greater than 10 mmhg between preductal and postductal oxygen saturations correlates to right-to-left ductal shunting.**



Source: Lowry AW, Bhakta KY, Nag PK: *Texas Children's Hospital Handbook of Pediatrics and Neonatology*; www.accesspediatrics.com
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Neonatal heart failure /1-2 weeks

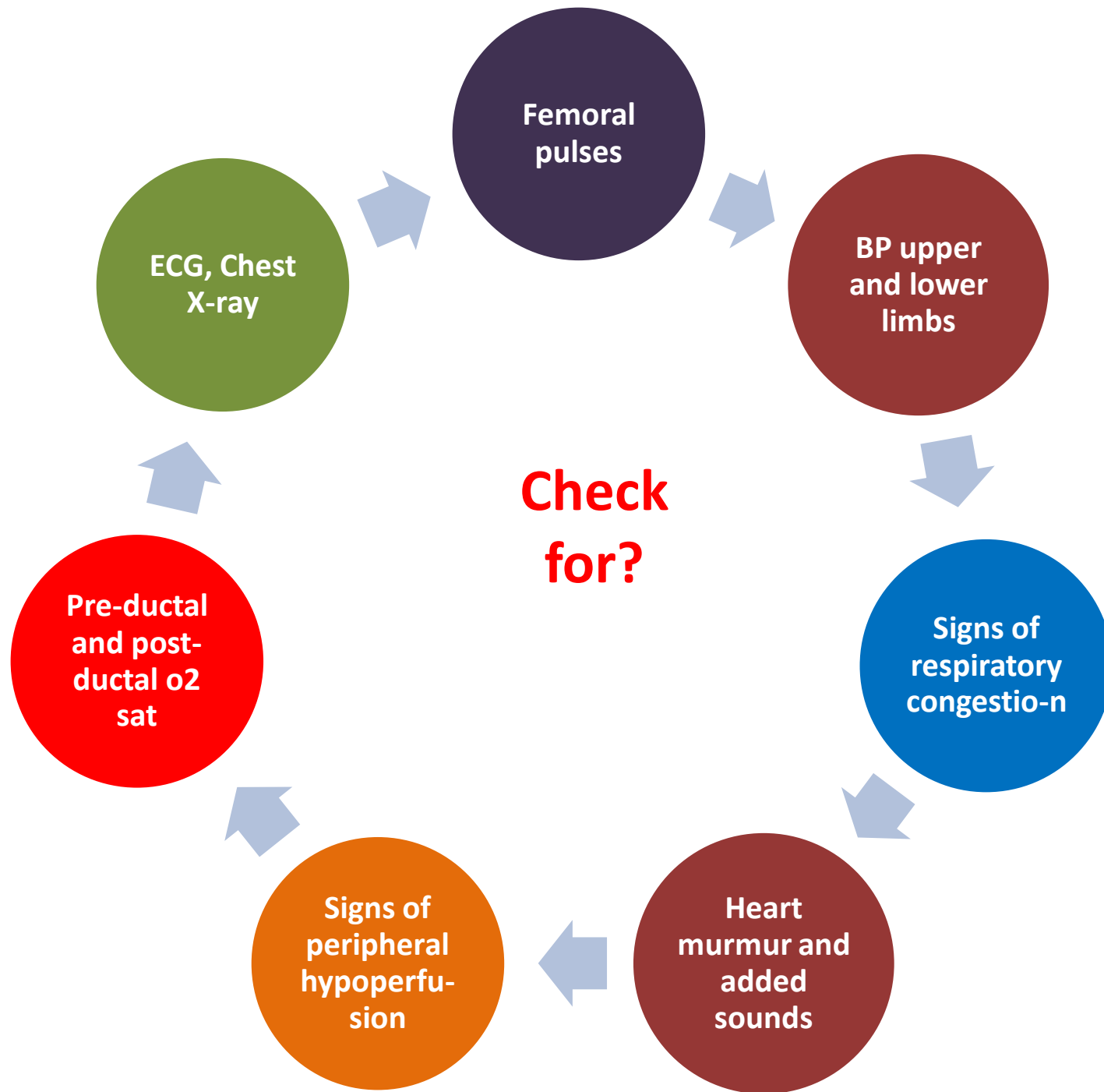
Until Proof Otherwise:

✓ After 24-48 hours of life, if there is a systemic shock:

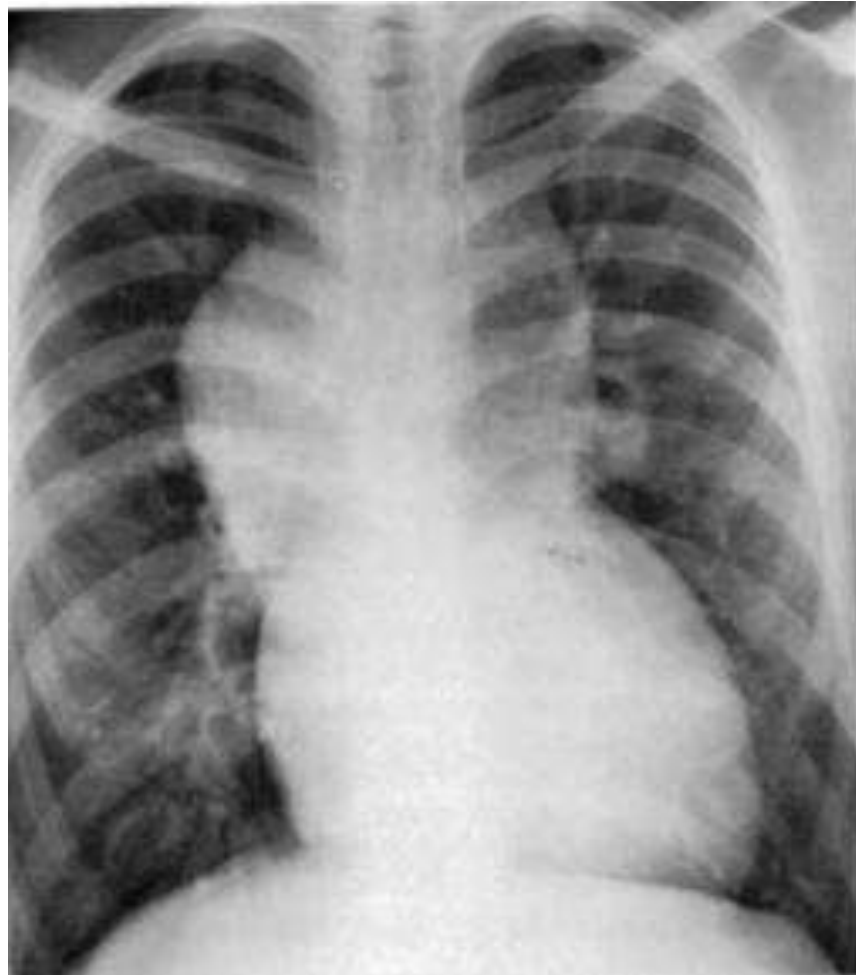
➤ N.B has **a ductus arteriosus** for systemic circulation!

✓ Obstructive lesions of the left heart:

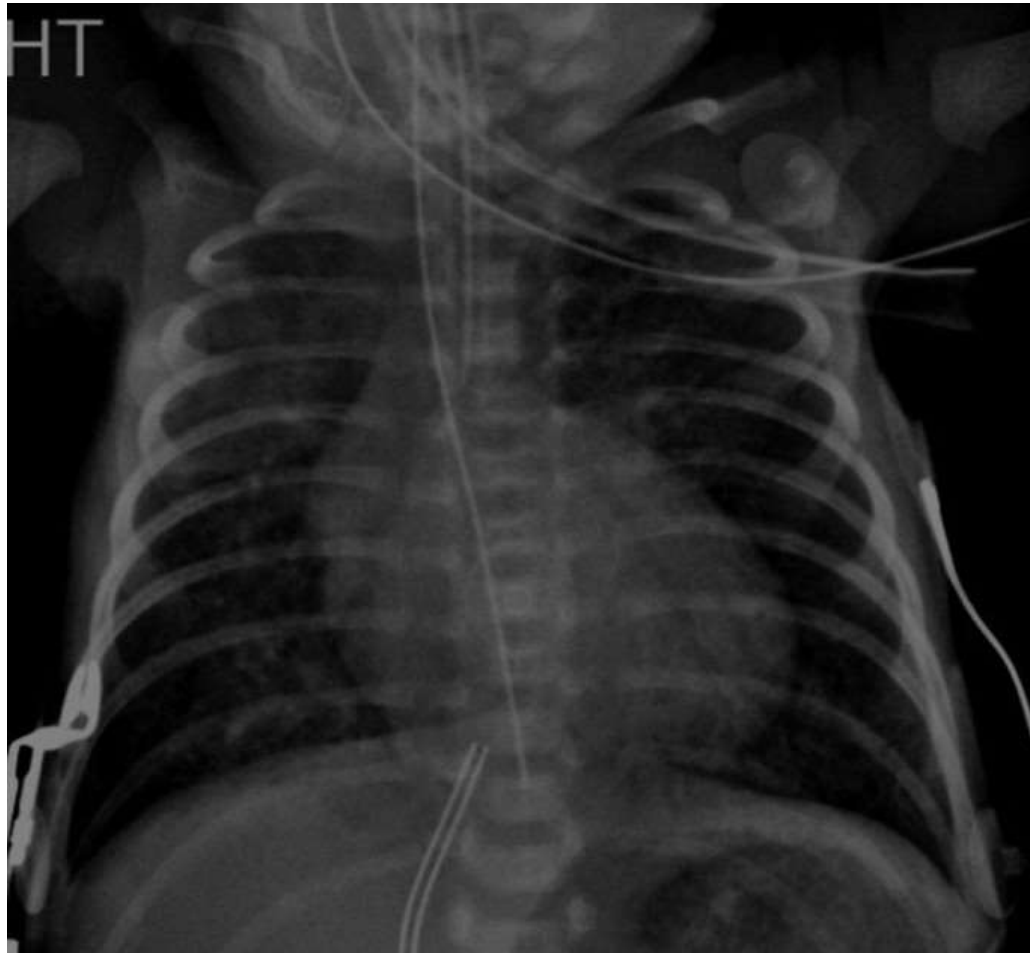
(Hypoplastic Left Heart Syndrome, Critical Aortic Stenosis, Neonatal Coarctation Of Aorta)



TAPVR



D-TGA



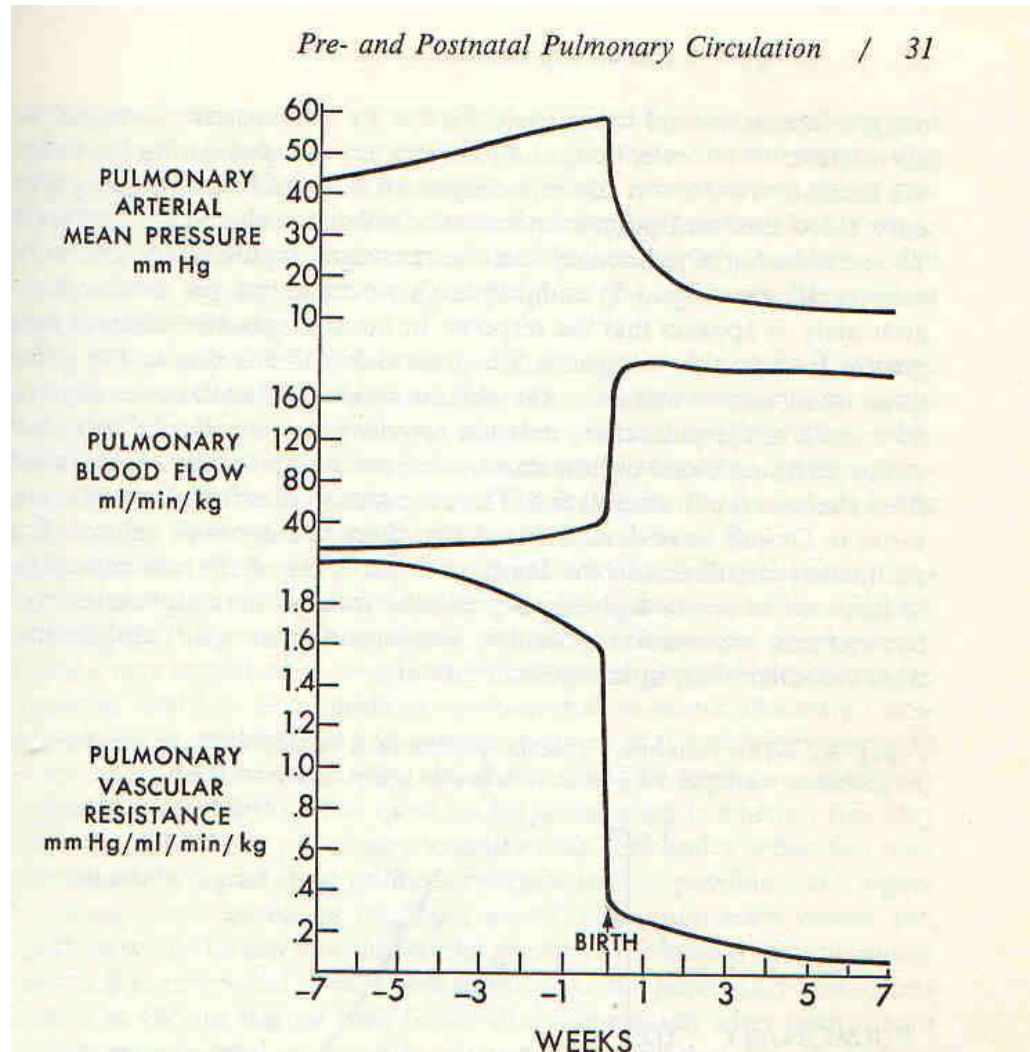
TOF



Ebstein anomaly



Pre- and postnatal changes in Pulmonary Pressure Pulmonary Flow and Pulmonary Resistances



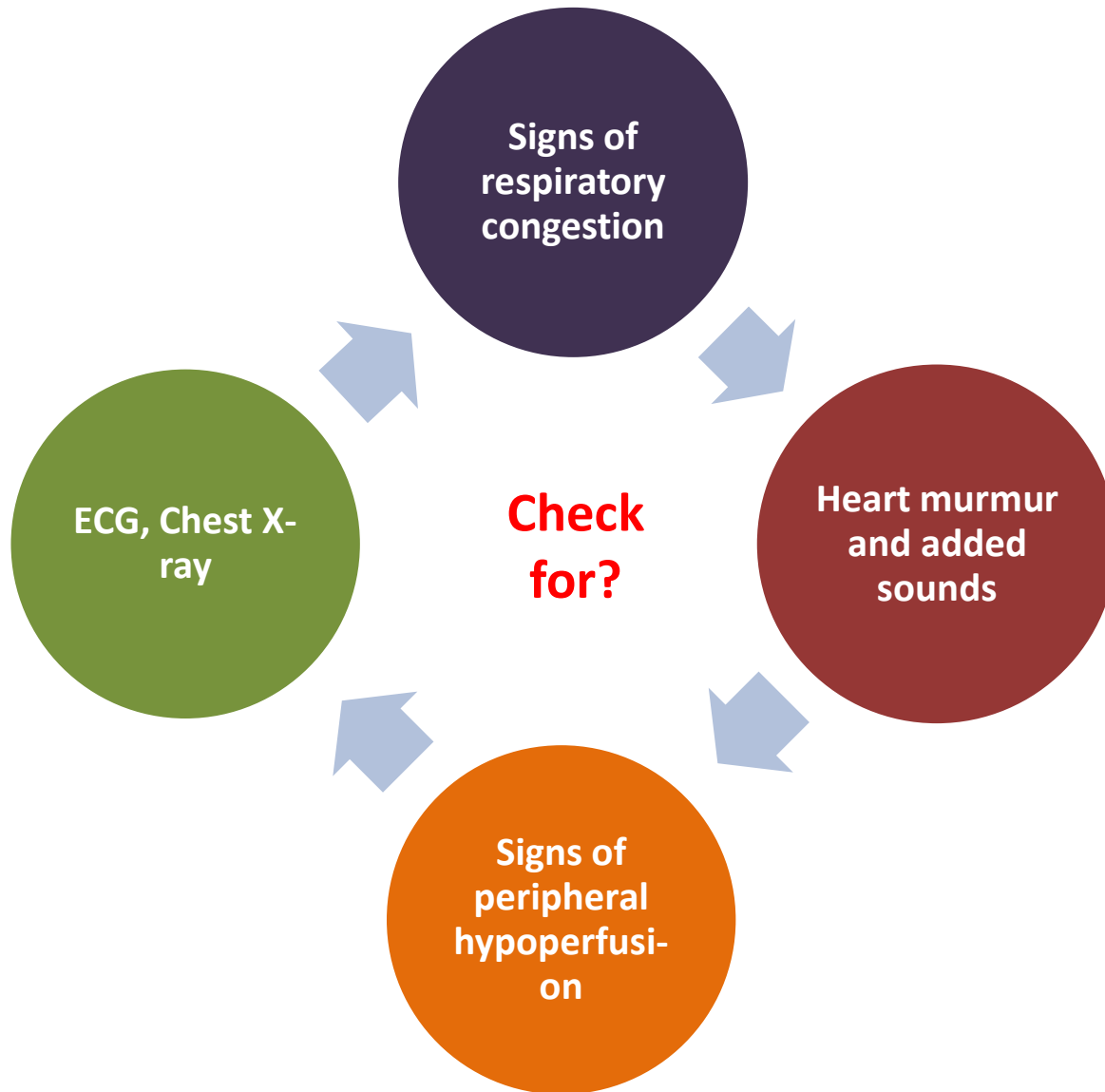
Neonatal heart failure /4-8 weeks

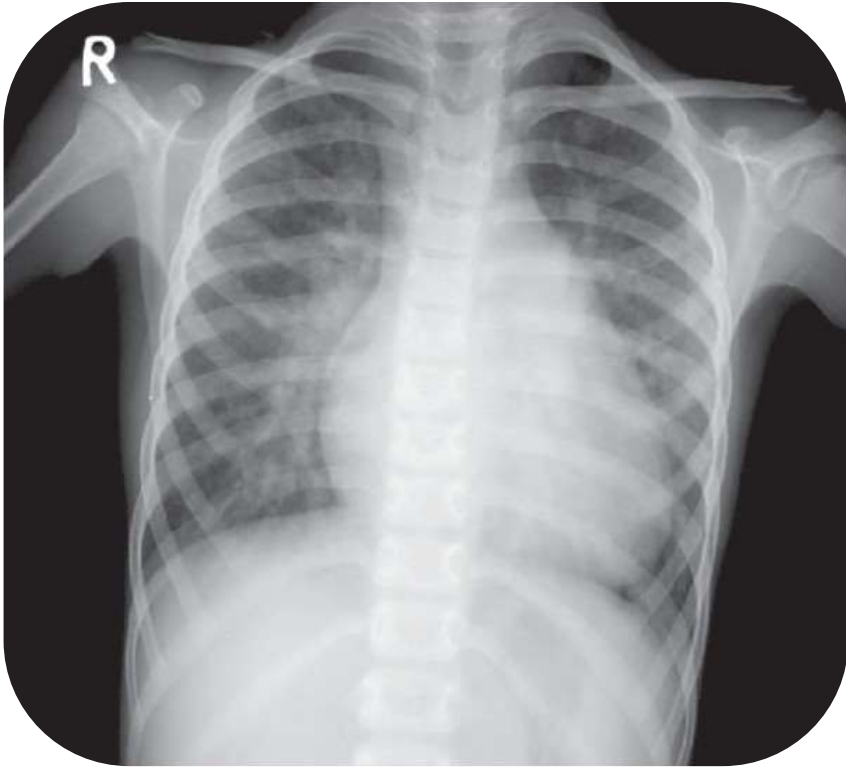
✓ Check for CHD associated **PVR**

➤ N.B has a L-R shunt

✓ **Heart defects with large L-R shunt**

(Single ventricle, truncus arteriosus, hemodynamically significant PDA, Non-restrictive VSD, complete A-V Canal)





Chest x-ray films

VSD /PDA.

Acute decompensated heart failure

Clinical Assessment

Congestion??

- Elevated JVP in older children with positive hepatojugular reflux.
- Shortness of breath with rales on auscultation
 - Orthopnea and paroxysmal nocturnal dyspnea
 - Pitting Peripheral edema.
- Recent and rapid weight gain
 - Ascites
- Hepatomegaly and abdominal pain
- Auscultation of a third heart sound (Gallop rhythm)

Low systemic perfusion??

- Cool, pale, mottled, ashen skin, especially in the periphery of extremities
 - Altered mental status
 - Prolonged capillary refill
 - Narrow pulse pressure
 - Decreased pulse volume or absent pulses
 - Hypotension
 - Decreased urine output
 - Pre-renal azotemia.