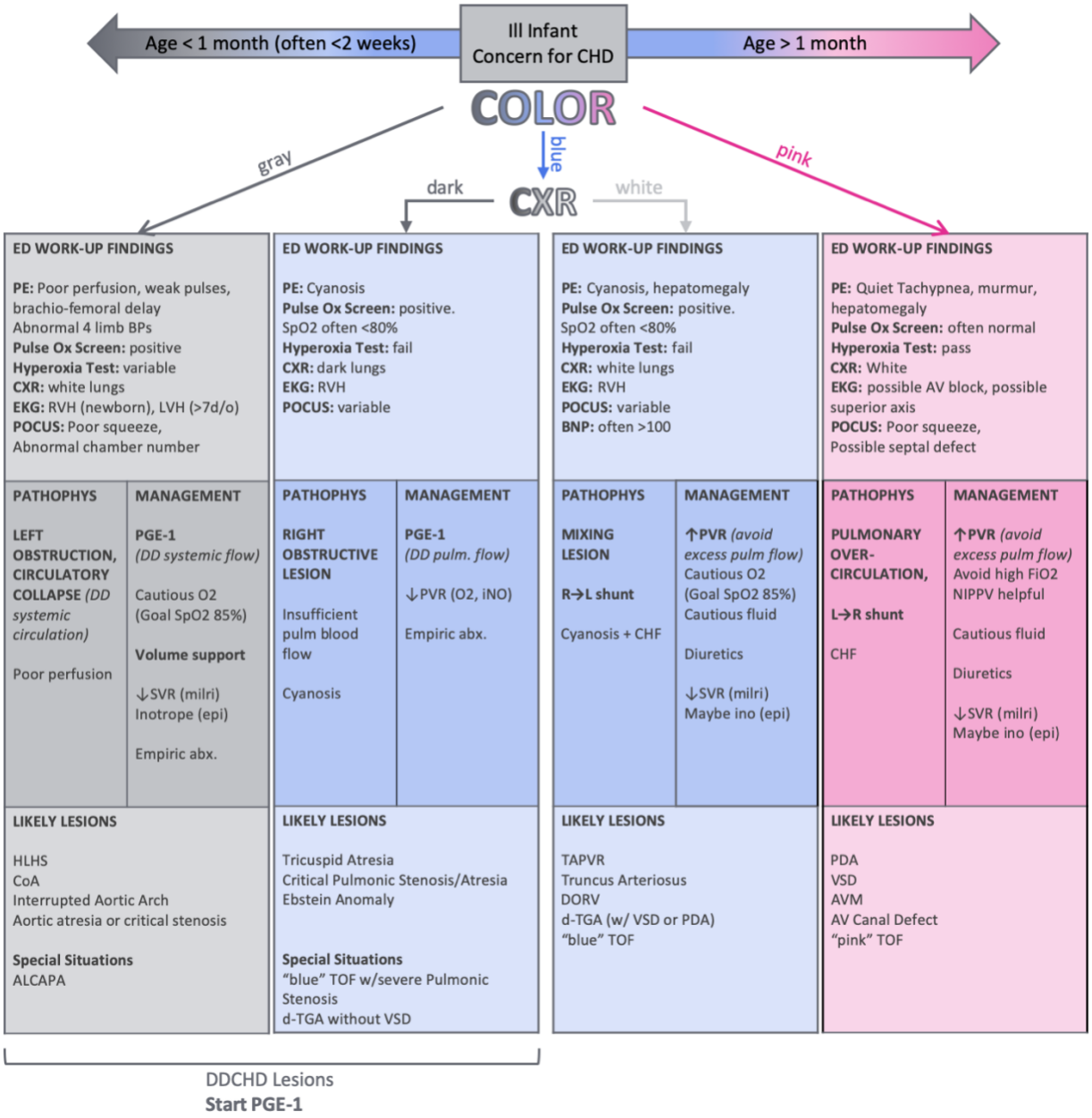
CRITICAL CONGENITAL HEART DISEASE



Using this figure: Assign "color" based on general appearance and skin signs:"Grey" baby is pale and dusky and has poor cap refill, "Blue" baby implies central cyanosis, and "pink" baby has good perfusion and SpO2.

Special situations refer to pathologies that present clinically similarly to a pathophysiologic category but may not have that physiology. For example, ALCAPA is an abnormality of the coronary vasculature not a left obstruction but presents with circulatory collapse.

Adapted from figure 1 in Strobel AM, Lu LN. The Critically Ill Infant with Congenital Heart Disease. Emerg Med Clin North Am. 2015;33(3):501-518. doi:10.1016/j.emc.2015.04.002

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Lilly A Bellman, MD Last updated 10/2019

CRITICAL CONGENITAL HEART DISEASE

Bedside Tests for evaluation of suspected critical CHD *(Strobel et al.)*

Hyperoxia Test

Traditional:

1. *Draw ABG while on room air
2. Place patient on 100% O_2 via non-rebreather mask for 5-10 minutes
3. Repeat ABG and compare to prior

Passed Hyperoxia test: $PaO_2 \geq 200$ after hyperoxia: suggestive of respiratory disease
Failed Hyperoxia test: PaO2 < 200 after hyperoxia: highly suggestive of critical CHD

Pulse oximetry method
Monitor response to 100% O2 on the SpO2. SpO2 that remains <85% despite 5-10 minutes 100% O2 therapy highly suggestive of critical CHD.

*may consider drawing only the post-hyperoxia ABG

Pulse Oximetry Screen (Screen positive if any of the following is true)

- Pre-ductal (RUE) OR either LE SpO2 < 90%
- Pre-ductal AND either LE SpO2 < 94%
- Difference in SpO2 >3% between Pre-ductal and either LE

4 Limb Blood Pressure Examination

- SBP differential >10 mmHg between pre-ductal RUE and post-ductal (either LE)
- Positive test suggestive of left sided obstructive lesion such as coarctation of the aorta

PGE-1 (Alprostadil) Infusion Information *(Strobel et al., Lexicomp)*

INITIAL INFUSION RATE	TITRATION	MAXIMUM
0.05 mcg/kg/min	Increase by 0.05 mcg/kg/min every 10-15 minutes to effect (monitor circulation, oxygenation)	0.4 mcg/kg/min

ADVERSE EFFECTS (short term, dose dependent)

- **Apnea** (up to 15% neonates) – be prepared for mechanical ventilation
- hypotension, fever, seizures

INFUSION PEARLS

- Use the lowest effective rate of infusion to minimize adverse effects
- Dedicated line for PGE-1. Avoid infusion interruption!

Furosemide (Lasix) Drug Information *(Strobel et al., Lexicomp)*

Mechanism	Dosing
Loop diuretic. Pulmonary vascular effects (pulmonary vasodilation)	**IV/IM Dosing:** 0.5-1 mg/kg IV/IM (max. 20mg) q6-24hrs. May increase by 1mg/kg q2h for effect to max. dose 2mg/kg (max 80mg) **PO Dosing:** 1-2 mg/kg PO q12-24hrs (usual starting dose max 20mg)

Notes: Furosemide is usual first line diuretic for new onset CHF
IV route: rapid onset within 30 minutes. Peak effect in 1-2hrs.
Diuretic naïve patients tend to respond to low end of dose range.

Monitoring:

- BP for hypotension
- strict ins/outs
- Na, K levels (risk hyponatremia, hypokalemia)
- Renal function. Use with care in patients with renal dysfunction

RSI Considerations *(Strobel et al.)*

Induction: Etomidate or fentanyl
Caution with ketamine (works the heart too much, in some cases can worsen L>R shunt)