



Anaesthesia for congenital heart diseases cath lab



**Pediatrics are not young adults**

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One Heart = One Life  
SAVE IT



The advertisement features the Alhyatt logo at the top center, with the Arabic text 'الحياة' (Al-Hayat) and 'مركز القلب والأوعية الدموية' (Heart and Vascular Center) below it. A search bar with the website address 'www.alhyatt.com' is positioned below the logo. In the center, there are images of a smartphone, a laptop, and a tablet, all displaying the center's website. To the right, there is a '15011' logo. Below the images, the center's name is written in Arabic: 'مركز الحياة للقلب والأوعية الدموية' and in English: 'Alhyatt Heart and Vascular Center'. A small logo with a heart and the word 'الحياة' is on the left side of the text.

مركز الحياة للقلب  
والأوعية الدموية  
Alhyatt Heart  
and Vascular  
Center

## Objectives

- Procedures classification.
- Anatomical & physiological differences.
- Preoperative assessment.
- Intraoperative management.
- Postoperative management.

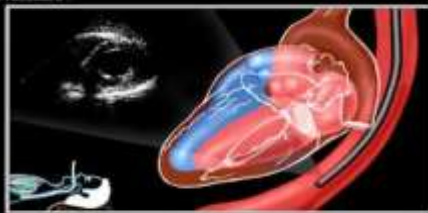
# Procedures classification

## Pediatric

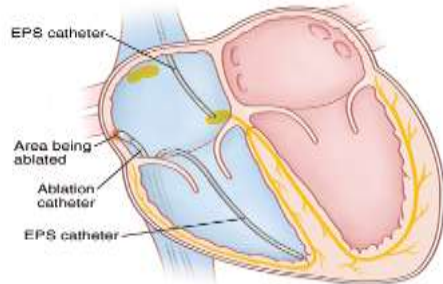
Diagnostic

Interventional

Transesophageal Echocardiography (TEE): Procedure



The transducer directs ultrasound waves into the heart, and the reflected sound waves are picked up by the transducer and converted into images.



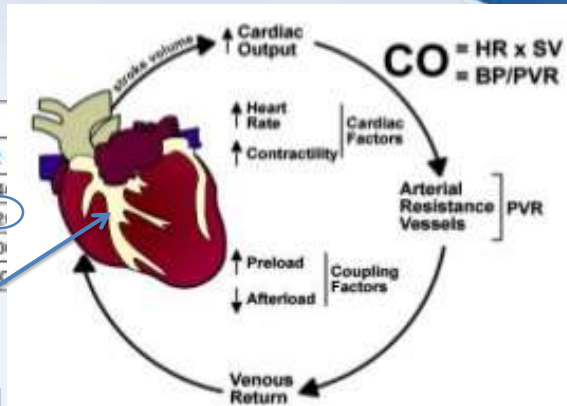
# Anatomical & physiological differences

## 1) CVS

### 1) HR, BP & COP

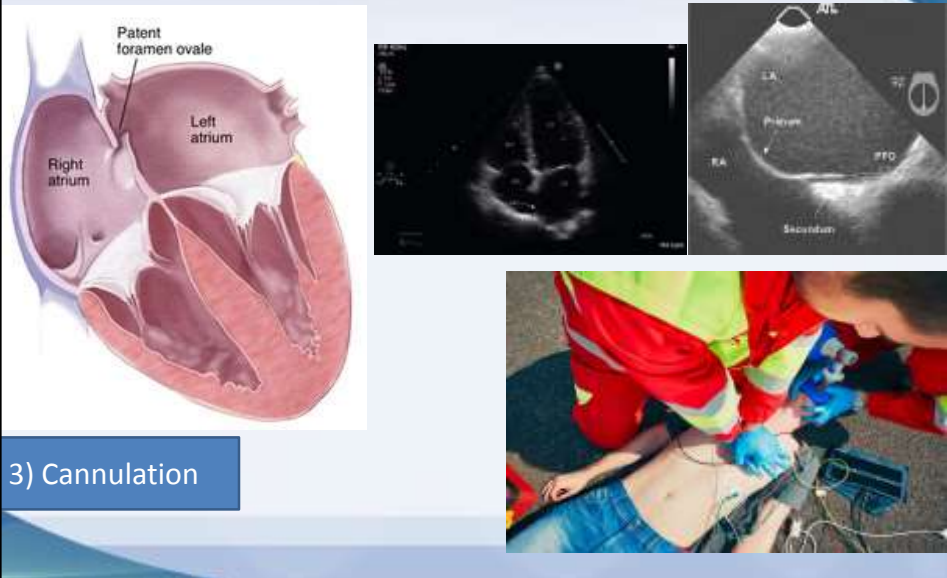
Age	Heart
Neonate	14
12 months	121
3 years	10
12 years	80

Less compliance  
Little reserve  
More volume sensitivity



Until late school-age and adolescence, cardiac output in the child is RATE DEPENDENT, not stroke volume dependent, making heart rate more rapid.

2) Heart:

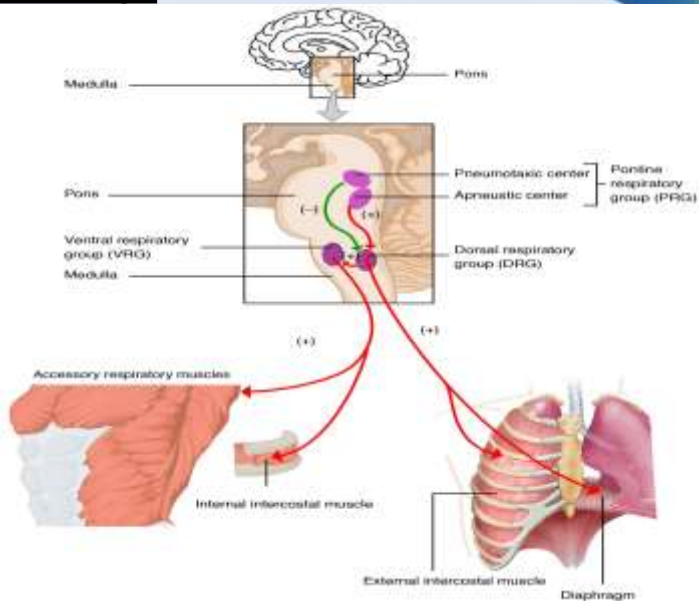


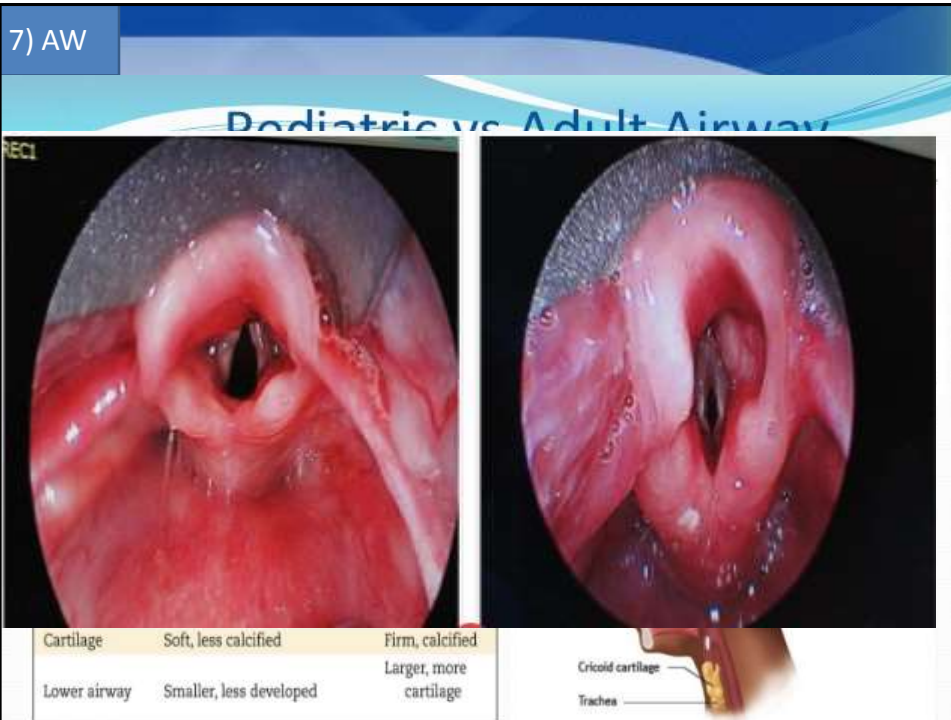
3) Cannulation

**2) Respiratory:**

5) Vd/Vt

6) Resp. centre





Preoperative  
Assessment &  
sedation



- History:
  - General condition, attacks of cyanosis, icu admission.....
- Examination:
  - Weight, cyanosis, chest, heart, abdomen, dehydration, cannulation.
- Investigations:
  - Lab.    - Imaging: ECHO, CXR, CT angio...

Route	Drug	Dose
Oral	• via oral trans-mucosa	Fentanyl oralet or lollipop 10-15 µg/kg (onset 10 min of completion)
	• via GIT absorption (the injection form of the drug can be mixed in a small volume of flavored drink as they have bitter taste)	Ketamine Midazolam Diazepam Chloral hydrate 5-10 mg/kg 0.25-0.5 mg/kg (maximum 15 mg) (onset 10 minutes and peak at 20-30 minutes) 0.2-0.4 mg/kg 50-100 mg/kg (maximum 2g/day) (onset 60 minutes and prolonged action $t_{1/2}$ = 8-11 hours)
Intramuscular	Ketamine Midazolam	2 mg/kg 0.1-0.15 mg/kg
Intravenous	Morphine Ketamine Midazolam Desmedetomidine	0.1 mg/kg 0.25-0.5 mg/kg 0.02-0.03 mg/kg 0.5-1 µg/kg over 10 minutes followed by 1 µg/kg/h
Nasal	Ketamine Midazolam Sufentanil	As intramuscular dose 0.1-0.3 mg/kg
Rectal	Thiopental	30-44 mg/kg 5-10% solution (given in presence of the parents) to induce sleep for children < 20 kg within 5-10 min, then the child is taken to operating room for a steal induction. It may cause airway obstruction.
	Methohexital	25-30 mg/kg 5-10% solution (as thiopental).
	Ketamine	As oral dose.
	Midazolam	As oral dose.
	Chloral hydrate	As oral dose.

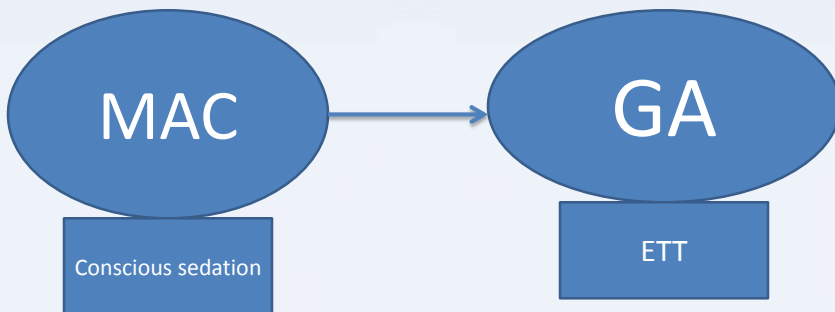
# monitoring







# Anaesthesia types

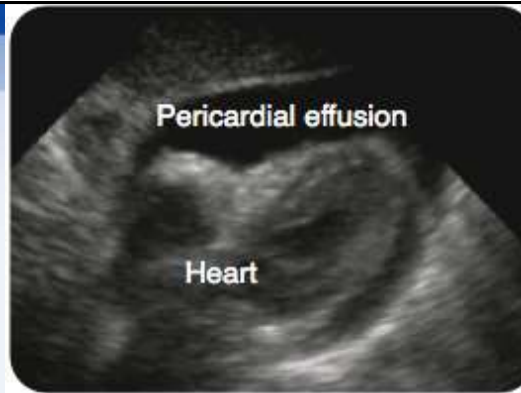




## Challenges in pediatrics

- Difficult AW.
- Difficult cannulation.
- Difficult transportation.
- Easy to loss heat.
- Hemodynamic instability.
- May need blood transfusion.
- Low weight.
- Difficult ventilation.





CPR according to neonatal  
and pediatric advanced  
European guidelines

Postoperative

- Keep sedation till end of good compression on the puncture site.
- Local xylocaine may be needed to decrease pain.
- Monitoring of saturation & respiration in the recovery especially neonate (apnea).
- Transportation is very risky especially in neonates.



Thank  
You

A blue and white graphic of the words "Thank You" in a bubbly, rounded font. The text is white with a thick blue outline. The words are stacked, with "Thank" on top and "You" below it. A small metal ring is attached to the top of the "T" in "Thank", and a thin brown string hangs from it.