

EPALS KEY REVISION NOTES

Notes in reference to, and any quotes are from:
European Paediatric Advanced Life Support (EPALS). 5th Ed. Resuscitation Council UK. 2021. London

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ANATOMICAL DIFFERENCES (PAEDS VS ADULTS)

- Children have narrower, smaller airways, which are more susceptible to swelling.
- Airways are cylindrical shaped. Foreign bodies are likely to be trapped in the narrowest part.
- Large tongue.

PHYSIOLOGICAL DIFFERENCES

- High HR is the main means to achieve cardiac output, so bradycardia is serious.
- Mean arterial BP is a better indicator of tissue perfusion than systolic BP.

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Trouble with adrenaline?

1:10,000 = 1g adrenaline in a 10,000 mL solution - - but it's presented in 10ml, so it's actually 0.1mg per mL = 100mcg per mL. So a child weighing 18kg should have 1.8mL (divide by 10) adrenaline, which is 0.18mg (0.1mg per mL), which is 180mcg. :)

WET FLAG

- Weight (kg) = Age + 4 x 2. Use this for those above 1. For infants, they are approx 3kg at birth and 10kg at 1 year.
- Energy (joules) = 4J x kg
- Tube = Age/4+4 (internal diameter)
- Fluids = Multiply the kg by 10.
- Adrenaline 1:10,000 = divide kg by 10. This gives you the mL.
- Glucose 10% = 2ml x kg

*Made in reference to EPALS book (reference above) and wetflag.com (Ben Sharif).

TYPES OF SHOCK

Hypovolaemic, distributive, cardiogenic, obstructive (e.g. tension pneumothorax/tamponade, dissociative (anaemia/carbon monoxide poisoning).

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RESPIRATORY FAILURE

Failure of the respiratory system to maintain an arterial O₂ level or cO₂ level on room air.

This is defined as failure of the PaO₂ to be >9kpa (90% spo₂) and the PacO₂ to be <6.5kpa

WARNING SIGNS OF RESPIRATORY FAILURE. THESE ARE SIGNS OF DECOMPENSATION.

- Decreased LOC
- Floppy
- Reduced respiratory effort
- Cyanosis
- Sweating
- Bradycardia

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CARDIORESPIRATORY FAILURE

- Tachycardia - HR >180 before 1 year; >160 after 1 year
- Decreased central pulses
- Absent peripheral pulses
- Bradycardia (pre-terminal) <100 newborn

BLS KEY POINTS

- Head tilt to neutral in an infant; to 'sniffing' in a child + gradually increase to reach effective point.
- CC depth 1/3 + never more than the adult 6cm depth
- 2 finger technique in infants or thumb encircling technique
- 1 handed CC in a child (over 1 year).
- For pulses, palpate the brachial pulse in an infant, and the carotid in a child; can also use the femoral in both age groups.
- Number of ventilations: infants 25 breaths; children 20 breaths; 8-12 years old 15 breaths; over 12, 10-12 (adult number). Ask for 20-25 for young children (~1 every 3 seconds).

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EPALS KEY REVISION NOTES #2

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CHOKING KEY TERMS

- Back blows, then abdominal thrusts are chest thrusts in an infant.

ARRHYTHMIA ALGORITHM

*IN PAEDS, THERE IS ONE ALGORITHM THAT COVERS BOTH BRADYS AND TACHYS

- Decompensated signs = reduced LOC, tachypnoea, brady/tachy, BP <5th centile, CRT >2 seconds, weak/impalpable pulses.
- If decompensated + brady, oxygenate.
- If HR <60 + unconscious, start chest compressions.
- Give atropine if no response to oxygenation. Also indicated when increased vagal tone is the cause of the bradycardia e.g. induced by tracheal intubation/suctioning.
- If tachy + decompensated, cardiovert for SVT or VT. Give adenosine or amiodarone before the 3rd shock.

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SVT DEFINITION

- >220min in an infant
- >180 min in a child
- Abrupt onset

SINUS TACHY DEFINITION

- Up to 220 for an infant
- Up to 180 for a child
- Gradual onset
- Treat the cause

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COMMON CAUSES OF BRADYS

- Hypoxia
- Vagal stimulation
- Hypothermia and hypoglycemia may also be causes.

VAGAL MANOUVRES

- Consider use of a cold flannel, or the Valsalva technique in older children.

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CROUP

- Give dexamethasone up to 3 doses
- Nebulised adrenaline may then also be given, 3-5ml of 1:1000 for severe distress.
- Nebulised steroids e.g. budesonide as well.

EPIGLOTTITIS

- Don't look in the throat if you suspect this.
- Request senior support.

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EPALS KEY REVISION NOTES #3

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BACTERIAL TRACHEITIS

- Common aged 3-8 years
- Consider in cases of upper airway obstruction not responding to croup management.
- Give broad spectrum abx.

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ASTHMA

- ABG if decompensating
- intubation if severe hypoxia, arrest, reduced LOC
- Give steroids
- Give an anticholinergic e.g. ipratropium
- Give magnesium as a slow bolus
- Give aminophylline if life-threatening

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Always check the most up-to-date guideline before administrating drugs. These doses are also on the anaphylaxis 2021 algorithm.

ANAPHYLAXIS

- IM dose 100-150mcg (0.10-0.15ml) <6 months
- 6 months-6 years 150mcg IM
- 6-12 years 300mcg
- 12+ adult dose.
- Mast cell tryptase confirms diagnosis (don't delay treatment).
- In refractory treatment, give an adrenaline infusion alongside fluid bolus. Use a non-glucose containing crystalloid e.g. Hartmann's.

SIGNS OF CONGENITAL CARDIAC PROBLEMS

- Murmur
- Cardiac failure
- Poor systemic perfusion.

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IN SEPSIS....

- Careful with fluid management
- Abx within 1 hour
- Consider hot/cold sepsis signs + fluid refractory shock

FOR SEIZURES

- Lorazepam 0.1mg/kg
- Treat BM <3 with dextrose

*Don't forget to check your doses in the latest guidelines.

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IN DKA

- Careful with fluid management
- Dehydration degree is pH dependent.
- Consider in BM >11, pH <7.3, weight loss, confusion, abdo pain, reduced RR, polyuria, bicarb <15, ketones >3
- Treat fluid deficit + correct over 48h.

HYPERKALAEMIA

- Mild >5.5 asymptomatic. Give salbutamol, furosemide, calcium resonium
- Moderate 6-7. asymptomatic. Give insulin/dextrose.
- Severe >7, symptomatic. Give calcium gluconate, bicarb if acidosis, hydrocortisone if adrenal insufficiency.

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EPALS KEY REVISION NOTES #4

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TRAUMA POINTS WORTH CONSIDERING

- Decerebrate vs decorticate
- Neg ultrasound examination does not rule out severe internal bleeding.
- Consider 30 degree elevation. Neutral position.
- MAP maintenance.
- In drownings, remove horizontally.
- In jaw thrust manoeuvres, 'opening the airway takes priority, and therefore, some slight head extension may be necessary; very gently increase the amount of extension until the airway is just open.'

NEWBORN LIFE SUPPORT

- Dry, wrap, stimulate, warmth.
- Assess colour, tone, breathing, HR.
- No response/breathing/circulation? Open airway. 5 inflation breaths with air.
- Reassess for increase in HR or chest movement. Adjust and repeat inflation breaths if no chest movement. Once chest is moving, ventilate.
- If after 30 seconds HR is less than 60 or not detectable, give 3:1 chest compressions: ventilations with 100% O₂. Consider intubation.
- Reassess every 30 seconds.
- Vascular access, drugs, other causes.

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CUSHING'S TRIAD

- Raised ICP
- High BP
- Bradycardia
- Sighing respirations

Positioning is a later sign

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- Pain
- Position
- Paralysis
- Paresthesia
- Priapism
- Ptosis

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AMPLE

- Remember the old acronym:
 - Allergies
 - Medications
 - Past Medical Hx
 - Last meal
 - Environment (event)(history)

PRETERM

- <32 weeks

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BRONCHIOLITIS

'Admission to hospital is recommended if:

- Apnoea (observed or reported)
- Persistent oxygen saturation of less than 92% when breathing air
- Inadequate oral fluid intake (50-75% of usual volume, taking account of risk factors and using clinical judgement)
- Severe respiratory distress [...] respiratory rate of over 70 breaths min⁻¹

TRAUMA: C-SPINE COLLARS

- 'There is also no proof of their added value in terms of preventing further c-spine injury, especially if the collar does not fit well'
- 'Therefore, the standard use of collars is no longer advised. Collars might still have a place during the extrication of a severely injured child or later in the definitive care of a child with a proven c-spine injury'; if using check it regularly

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