Paediatric Basic Life Support

- Descriptor of infant/child as follows
  - Newborn: just after birth
  - Infant: under 1 year of age
  - Child: 1 year to 18 years of age.

  If the rescuer believes the victim to be a child then they should use the paediatric rather than the adult guidelines as causes of collapse differ.

- Assessment of breathing is the first step in an unresponsive child. The assessment of other signs of life is done during the rescue breaths. Chest compressions should be commenced immediately after delivering/attempts five rescue breaths unless you are a single rescuer. If there is only one rescuer, with a mobile phone, they should call for help (and activate the speaker function) immediately after the initial rescue breaths.

- Feeling for a pulse is not a reliable way to determine if there is adequate or effective circulation and should not be used as the determinant of the need for chest compressions (de-emphasis on checking for a pulse).

- Chest compressions in infants should preferably be provided using the two-thumb encircling technique, although single rescuers, or those not trained in paediatric basic life support, may prefer using two-finger technique.

- Those unable or unwilling to provide rescue breaths should be encouraged to perform hands-only CPR – as they have been in adults.

- Use of mobile phone with speaker phone to facilitate bystander access to dispatcher guided CPR and remove need to leave infant/child to summon help. It is advised that an Automated External Defibrillator (AED) be used in all non-traumatic prehospital paediatric resuscitation if available, especially if there is more than one rescuer.

Paediatric Advanced Life Support

- Seriously ill infant/child – aim for oxygen saturations 94-98% with as little supplemental oxygen as possible. Sustained saturations of 100% should be avoided.

- Do not give pre-emptive oxygen to infants/children without signs of or immediate risk of hypoxaemia or shock.

- Infants/children with respiratory failure +/- hypoxaemia not responding to low-flow oxygen (but adequate respiratory drive) – competent providers should consider HFNC oxygen or CPAP/NIV support.

- Consider use of supraglottic airway (or intubation) if BVM does not improve oxygenation. Capnography should be used in all intubated children for early recognition of tube mal-placement or displacement.

- For tracheal intubation, use cuffed tracheal tubes (TT) for paediatric life support (except in neonates where there is less evidence for their use). Monitor cuff inflation pressure and limit this according to manufacturer’s recommendations (usually less than 20cm H2O).

- Continual compressions once intubated. Ventilations at lower limit of normal range for each age group:
  - Infants: 25/min
  - Child (1-8 years): 20/min
  - Child (8-12 years): 15/min
  - Children over 12 years: 10-12/min

- Fluid boluses of 10ml/kg in all types of shock (including Sepsis and Anaphylaxis). Balanced isotonic crystalloids as first choice. If not available, 0.9% saline is acceptable alternative. Frequent reassessment of the child is still necessary.
- In haemorrhagic shock, keep crystalloids to a minimum (20ml/kg max). Consider blood products early with focus on improving coagulation
- **All paediatric ALS providers** should be competent in IO access and have regular retraining on devices used in their organisation
- Infants/children with febrile illness but no signs of shock should not receive fluid bolus therapy
- Noradrenaline or adrenaline as first line vasoactive drugs. **Dopamine is no longer recommended** (but can be used if noradrenaline/adrenaline are not available)
- **Paediatric ALS providers should be competent in the use of these drugs in the first hour of stabilisation in circulatory failure**
- There is updated guidance in how to manage children and infants with decompensated circulatory failure due to either **supraventricular (SVT) or ventricular tachycardia (VT)**. The first choice for treatment is immediate cardioversion at a starting energy of 1 J kg\(^{-1}\) body weight. Double the energy to 2 J kg\(^{-1}\) if the initial electric cardioversion is unsuccessful. Consider up to 4 Jkg\(^{-1}\), but this should be guided by expert help. For children and infants who are conscious, use adequate analgesia and sedation (e.g. intranasal or intramuscular ketamine) with airway management. If an intravenous (IV) line can be rapidly sited IV analgesia and sedation (e.g. IV ketamine) can be used but IV access attempts must not delay cardioversion.
- Wide QRS tachycardias can be either VT or SVT with bundle branch block aberration, or antegrade conduction. In case the mechanism of the arrhythmia is not fully understood, wide QRS arrhythmia should be treated as VT. In a patient who is haemodynamically stable, the response to vagal manoeuvres may provide insight into the mechanism responsible for the arrhythmia and competent providers (with expert help) can subsequently try pharmacological treatment. Even in stable patients, electrical cardioversion should always be considered.

**Newborn resuscitation and transition of Infants at Birth**
- No major changes
- Cord clamping should not occur until at least 60 seconds after delivery. If this is not possible, cord milking is an option in babies over 28 weeks gestation
- **Immediate laryngoscopy +/- suction in non-vigorous babies born through meconium is not recommended.**
- **LMA may be considered in infants 34 weeks gestation and above** (2000g) if face mask ventilation/tracheal intubation is unsuccessful
- **Nasopharyngeal airway may be considered** if there is difficulty maintaining the airway and mask support fails to achieve adequate aeration
- Initial ventilation breath pressure for preterm babies (<32 weeks gestation is now 25cm H\(_2\)O
- Initial oxygen delivery varies with gestation.
  - >32 weeks gestation: 21% oxygen
  - 28-32 weeks gestation: 21-30% oxygen
  - <28 weeks gestation: 30% oxygen
  - For those < 32 weeks gestation, titrate oxygen to achieve saturations >80% at 5 minutes
- IO access is an acceptable route if umbilical access is not possible
- Adrenaline dose rationalised to 20 micrograms/kg (1:10000). Repeat every 3-5 minutes **Intra-tracheal route can be used if infant is intubated and no other access is available. 100microgramms/kg (1:10000) should be given**
- Thermal control maintained between 36.5\(^{0}\)C and 37.5\(^{0}\)C. Avoid hypothermia (<36.0\(^{0}\)) or hyperthermia (38.0\(^{0}\)).
- Stopping resuscitation should be considered if no response to treatment after 20 minutes and exclusion of reversible causes