

## ABCDE – HOW TO RECOGNISE AND TREAT THE SERIOUSLY ILL CHILD

	Possible Problems	Management Options
<b>A</b>	<p>Airway obstruction</p> <ul style="list-style-type: none"> <li>• Partial or complete</li> <li>• Foreign body</li> <li>• Secretions/blood/vomit</li> <li>• Infection</li> <li>• Swelling e.g. anaphylaxis</li> <li>• trauma</li> </ul> <p>Loss of airway reflexes due to decreased LOC</p>	<p><b>OXYGEN</b></p> <p><b>Airway positioning</b></p> <ul style="list-style-type: none"> <li>• Neutral position in infant</li> <li>• Sniffing position in children</li> </ul> <p><b>Clearance of secretions / FB</b> e.g. suctioning</p> <p><b>Airway adjuncts</b></p> <ul style="list-style-type: none"> <li>• oropharyngeal, nasopharyngeal, Advanced airway e.g. intubation</li> </ul> <p>In awake child, let them adopt their own position of comfort</p>
<b>B</b>	<p>Respiratory failure</p> <ul style="list-style-type: none"> <li>• Inadequate oxygenation</li> <li>• Inadequate ventilation</li> </ul> <p>Look for increased work of breathing, signs of respiratory failure (decreased LOC, hypotonia, cyanosis, bradycardia)</p>	<p><b>OXYGEN</b></p> <p>Treatment of underlying condition e.g. infection, asthma, pneumothorax</p> <p>Manual ventilation if poor effort e.g. BVM</p>
<b>C</b>	<p>Shock</p> <ul style="list-style-type: none"> <li>• Hypovolaemia e.g. haemorrhage</li> <li>• Distributive e.g. sepsis</li> <li>• Cardiogenic e.g. myocarditis</li> <li>• Obstructive e.g. tension PTX</li> <li>• Dissociative e.g. CO poisoning</li> </ul> <p>Remember ↓BP is a late sign</p>	<p><b>OXYGEN</b></p> <p><b>IV/IO access</b></p> <p><b>Fluid bolus of 0.9% NS</b></p> <ul style="list-style-type: none"> <li>• 10mls/kg in trauma / DKA</li> <li>• 20mls/kg in other medical conditions</li> </ul>
<b>D</b>	<p>Decreased LOC</p> <ul style="list-style-type: none"> <li>• check AVPU</li> <li>• check pupils for size + reactivity</li> <li>• posture</li> </ul> <p>Localising signs e.g. complex seizure, meningitis</p>	<p><b>OXYGEN</b></p> <p><b>CHECK BM</b></p> <p>Protect airway and breathing</p> <p>Consider recovery position</p> <p>Treat underlying condition</p> <p>Consider CT Brain</p>
<b>E</b>	<p>Assess for other signs of illness e.g. rash</p> <p>Assess for other signs of injury e.g. long bone fractures</p>	<p><b>KEEP WARM</b></p> <p>Preserve dignity</p>

Notes:

1. Get senior EM doctor and paediatric team early
2. Children are more likely to have a primary respiratory arrest than a primary cardiac arrest. The cause is often **HYPOXIA – GIVE OXYGEN**

**Contacting Paediatric team in an emergency**

1. Fast bleep 6000 and ask for **PAEDIATRIC TEAM** if urgent help needed
2. Bleep 6666 and ask for **PAEDIATRIC ARREST TEAM** if cardiac arrest

**TRAFFIC LIGHT SYSTEM**

The Traffic light system should be used to assess serious illness (NICE).

**Table 1 Traffic light system for identifying likelihood of serious illness**

	Green – low risk	Amber – intermediate risk	Red – high risk
Colour	<ul style="list-style-type: none"> <li>• Normal colour of skin, lips and tongue</li> </ul>	<ul style="list-style-type: none"> <li>• Pallor reported by parent/carer</li> </ul>	<ul style="list-style-type: none"> <li>• Pale/mottled/ashen/blue</li> </ul>
Activity	<ul style="list-style-type: none"> <li>• Responds normally to social cues</li> <li>• Content/smiles</li> <li>• Stays awake or awakens quickly</li> <li>• Strong normal cry/ not crying</li> </ul>	<ul style="list-style-type: none"> <li>• Not responding normally to social cues</li> <li>• Wakes only with prolonged stimulation</li> <li>• Decreased activity</li> <li>• No smile</li> </ul>	<ul style="list-style-type: none"> <li>• No response to social cues</li> <li>• Appears ill to a healthcare professional</li> <li>• Unable to rouse or if roused does not stay awake</li> <li>• Weak, high-pitched or continuous cry</li> </ul>
Respiratory		<ul style="list-style-type: none"> <li>• Nasal flaring</li> <li>• Tachypnoea:                             <ul style="list-style-type: none"> <li>– RR &gt; 50 breaths/minute age 6–12 months</li> <li>– RR &gt; 40 breaths/minute age &gt; 12 months</li> </ul> </li> <li>• Oxygen saturation ≤ 95% in air</li> <li>• Crackles</li> </ul>	<ul style="list-style-type: none"> <li>• Grunting</li> <li>• Tachypnoea:                             <ul style="list-style-type: none"> <li>– RR &gt; 60 breaths/minute</li> </ul> </li> <li>• Moderate or severe chest indrawing</li> </ul>
Hydration	<ul style="list-style-type: none"> <li>• Normal skin and eyes</li> <li>• Moist mucous membranes</li> </ul>	<ul style="list-style-type: none"> <li>• Dry mucous membrane</li> <li>• Poor feeding in infants</li> <li>• CRT ≥ 3 seconds</li> <li>• Reduced urine output</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced skin turgor</li> </ul>
Other	<ul style="list-style-type: none"> <li>• None of the amber or red symptoms or signs</li> </ul>	<ul style="list-style-type: none"> <li>• Fever for ≥ 5 days</li> <li>• Swelling of a limb or joint</li> <li>• Non-weight bearing/ not using an extremity</li> <li>• A new lump &gt; 2 cm</li> </ul>	<ul style="list-style-type: none"> <li>• Age 0–3 months, temperature ≥ 38°C</li> <li>• Age 3–6 months, temperature ≥ 39°C</li> <li>• Non-blanching rash</li> <li>• Bulging fontanelle</li> <li>• Neck stiffness</li> <li>• Status epilepticus</li> <li>• Focal neurological signs</li> <li>• Focal seizures</li> <li>• Bile-stained vomiting</li> </ul>

CRT: capillary refill time  
RR: respiratory rate

## SUMMARY OF BASIC LIFE SUPPORT

	Infant (<1 year)	Child (1 year to puberty)
<b>Airway</b>		
Head-tilt position	Neutral	Sniffing
<b>Breathing</b>		
Initial slow breaths	Five	Five
<b>Circulation</b>		
Pulse check	Brachial or femoral	Carotid
Landmark	Lower half of sternum	Lower half of sternum
Technique	Two fingers or two thumbs	One or two hands
CPR ratio	15:2	15:2



Figure 4.3 Head tilt and chin lift in infants



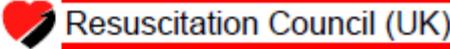
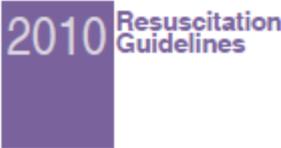
Figure 4.4 Head tilt and chin lift in children



### Vital Signs: Normal Ranges

Age (years)	Respiratory rate (breaths/min)	Systolic BP (mmHg) 5th centile	Systolic BP (mmHg) 50th centile	Pulse (beats/min)
<1	30–40	65–75	80–90	110–160
1–2	25–35	70–75	85–95	100–150
2–5	25–30	70–80	85–100	95–140
5–12	20–25	80–90	90–110	80–120
>12	15–20	90–105	100–120	60–100

# PAEDIATRIC LIFE SUPPORT: CHOKING CHILD



## Paediatric Choking Treatment Algorithm

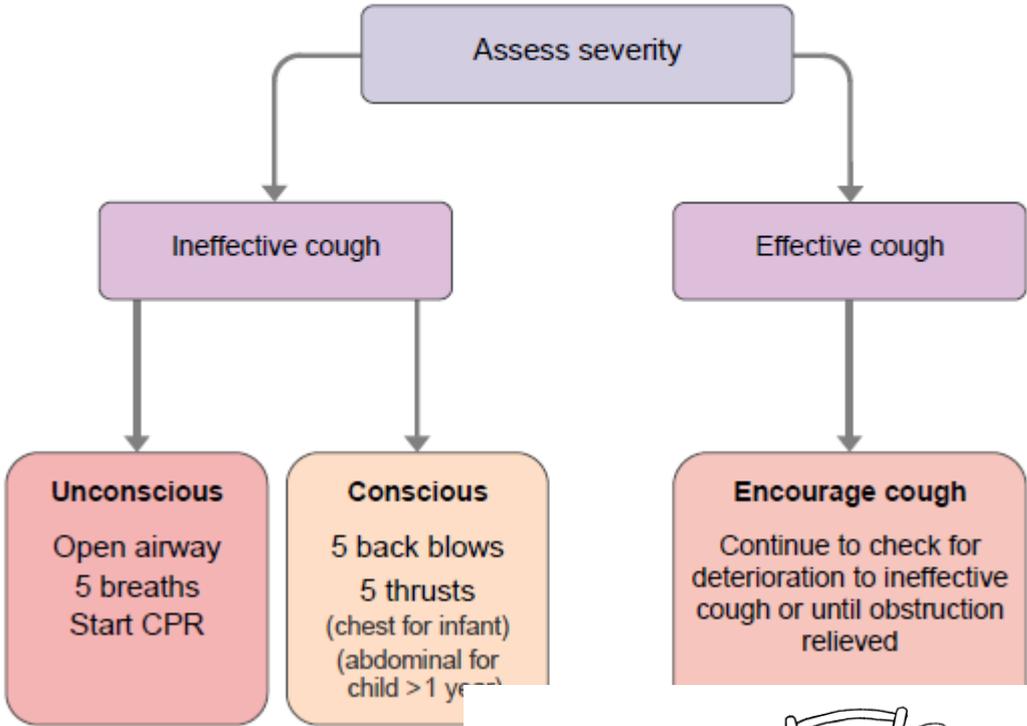


Figure 4.13 Back blows in an infant

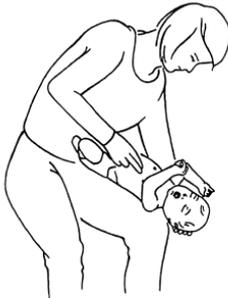


Figure 4.14 Chest thrusts in an infant



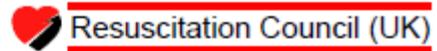
Figure 4.15 Back blows in a small child



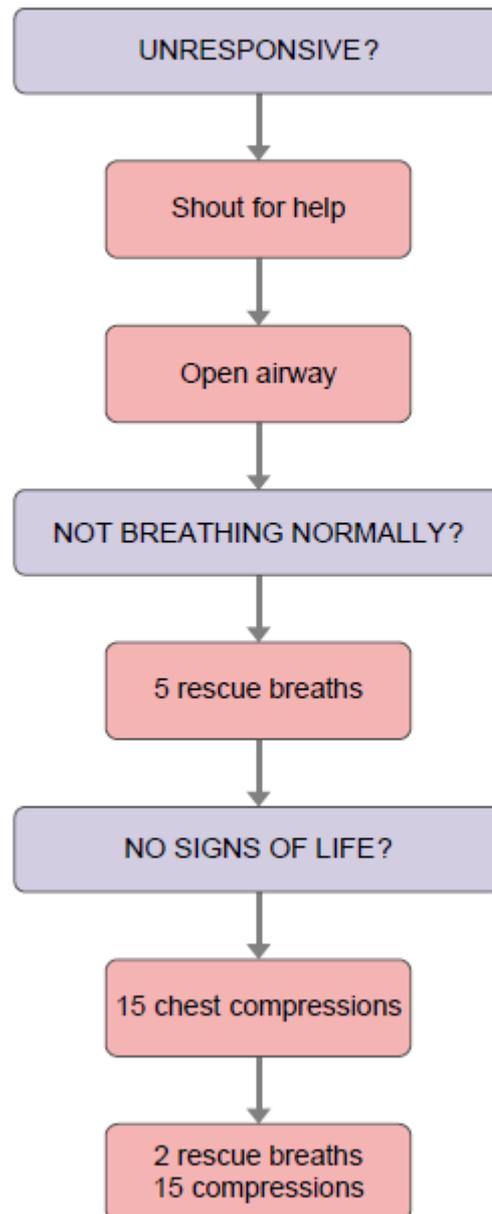
Figure 4.16 Heimlich manoeuvre in a standing child

# PAEDIATRIC BASIC LIFE SUPPORT

2010 Resuscitation  
Guidelines

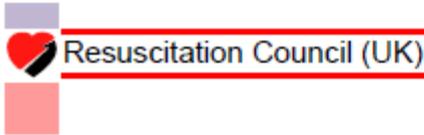


## Paediatric Basic Life Support (Healthcare professionals with a duty to respond)

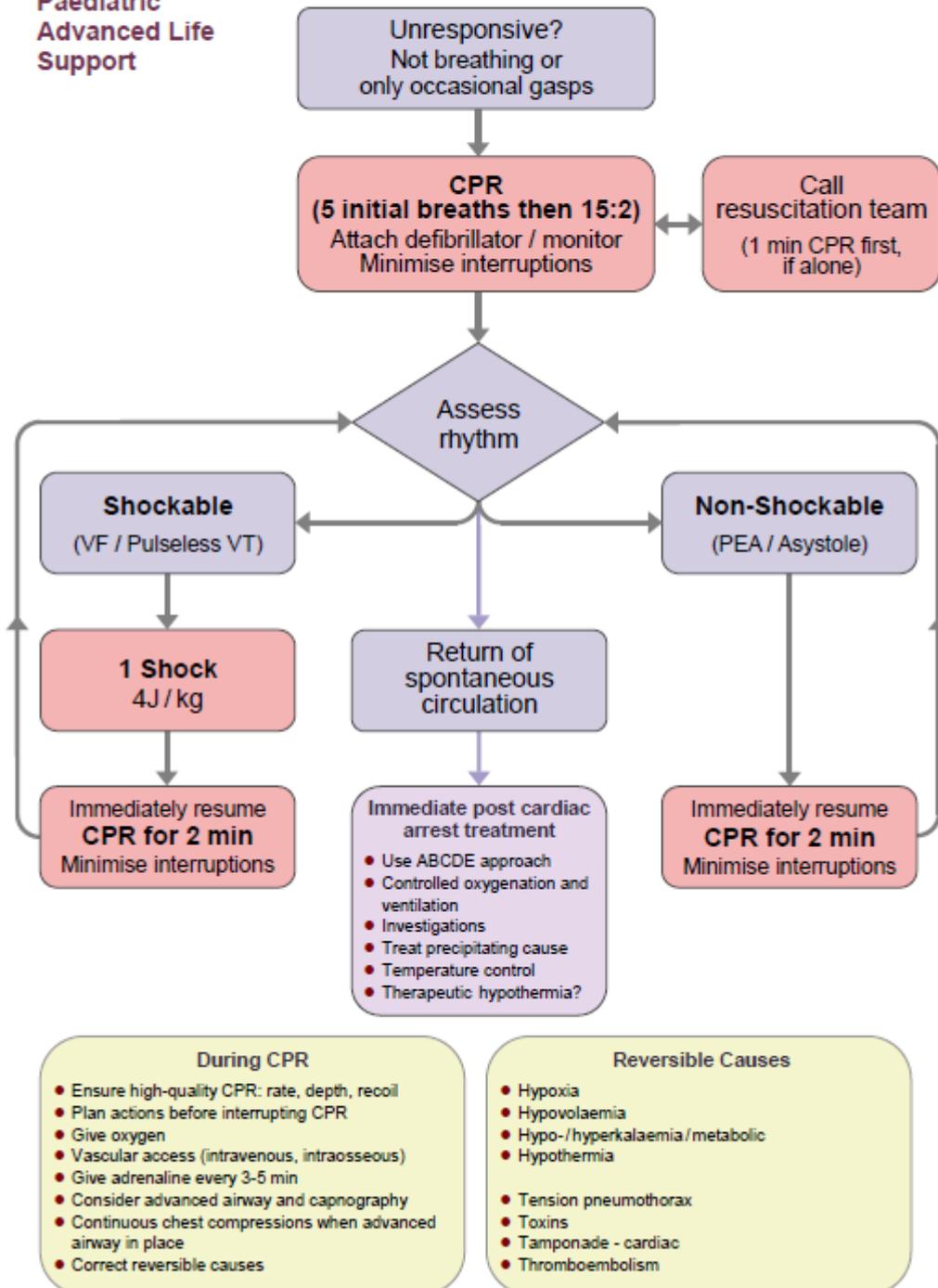


**Call resuscitation team**

# ADVANCED PAEDIATRIC LIFE SUPPORT: CARDIAC ARREST



Paediatric  
Advanced Life  
Support

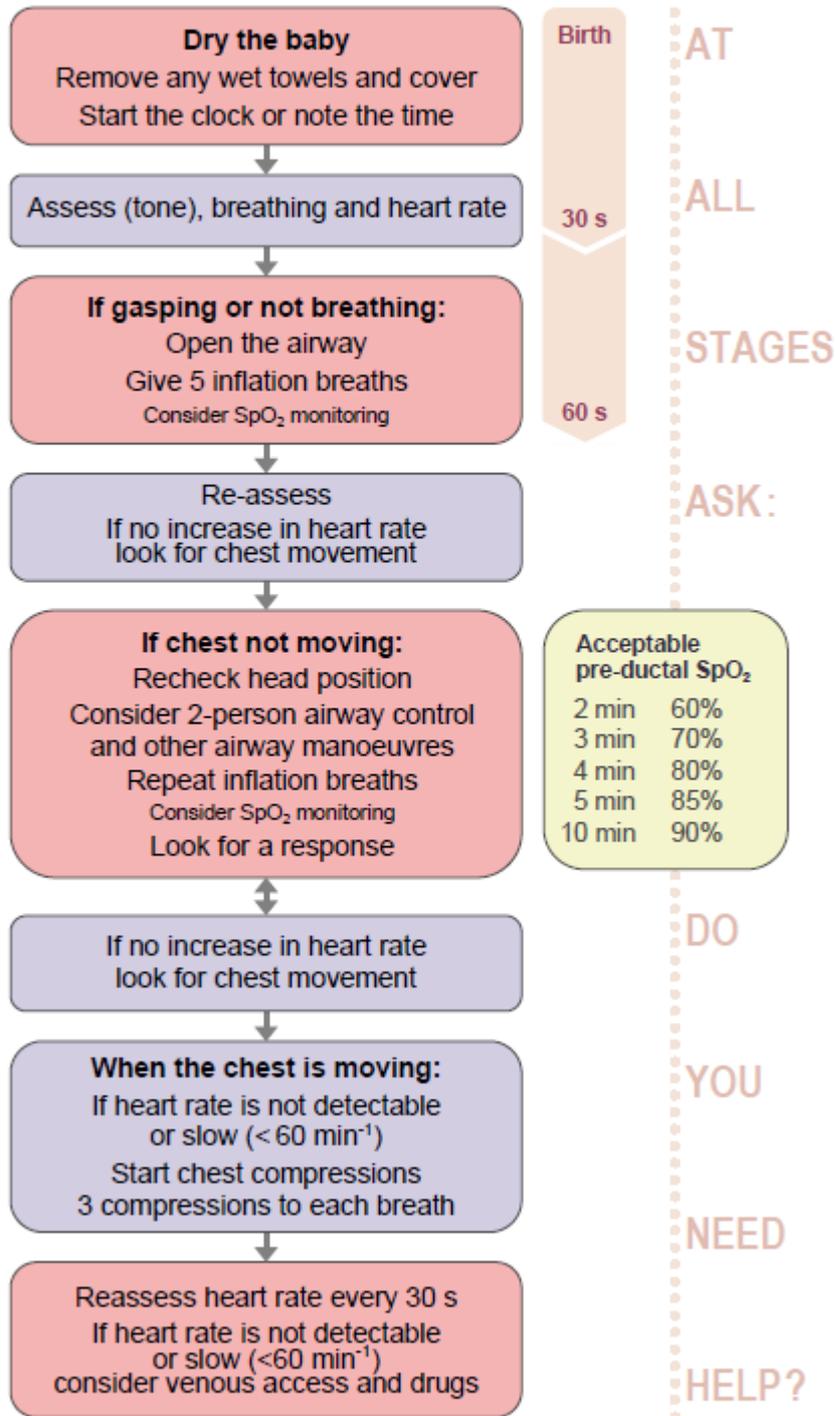


# ADVANCED PAEDIATRIC LIFE SUPPORT: NEWBORN LIFE SUPPORT

2010 Resuscitation Guidelines

Resuscitation Council (UK)

## Newborn Life Support



## ADVANCED PAEDIATRIC LIFE SUPPORT: BRADYCARDIA

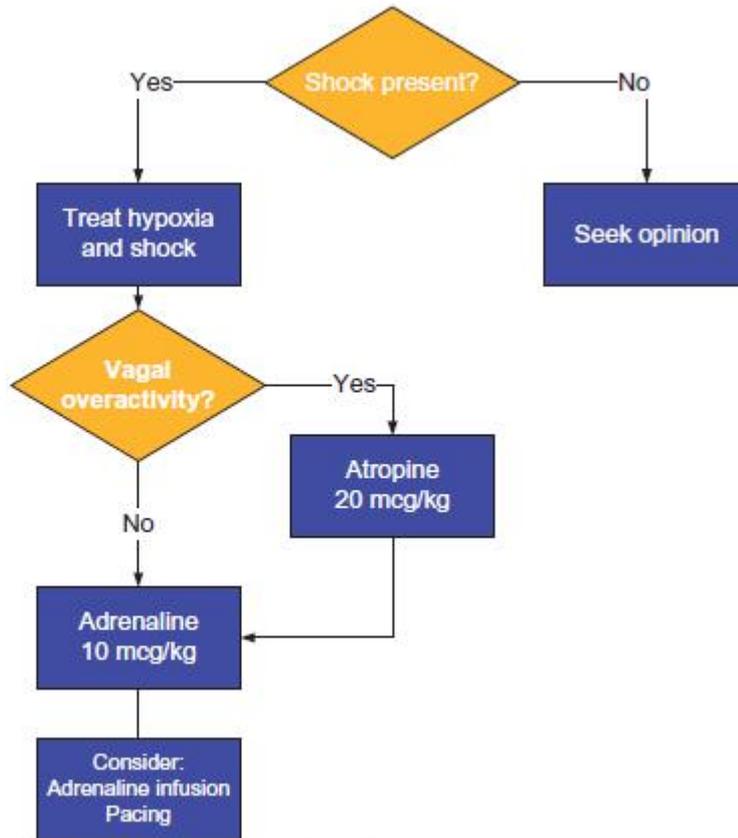


Figure 10.1 Algorithm for the management of bradycardia

# ADVANCED PAEDIATRIC LIFE SUPPORT: SUPRAVENTRICULAR TACHYCARDIA

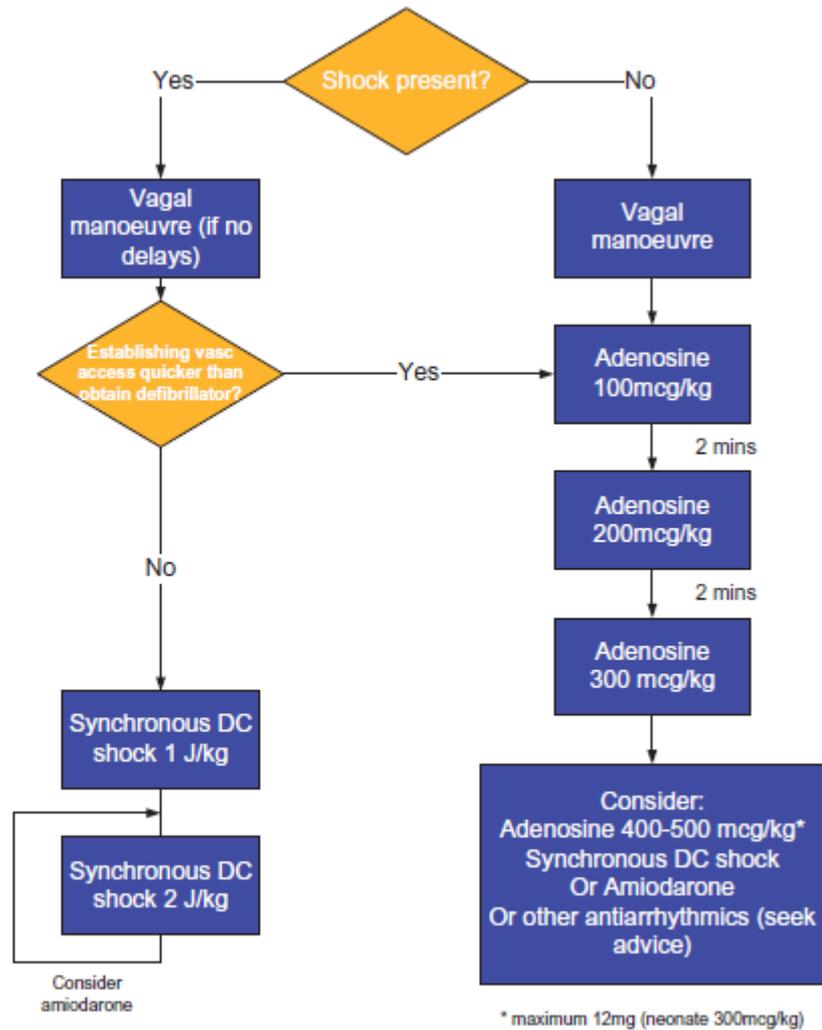


Figure 10.4 Algorithm for the management of supraventricular tachycardia

## ADVANCED PAEDIATRIC LIFE SUPPORT: VENTRICULAR TACHYCARDIA

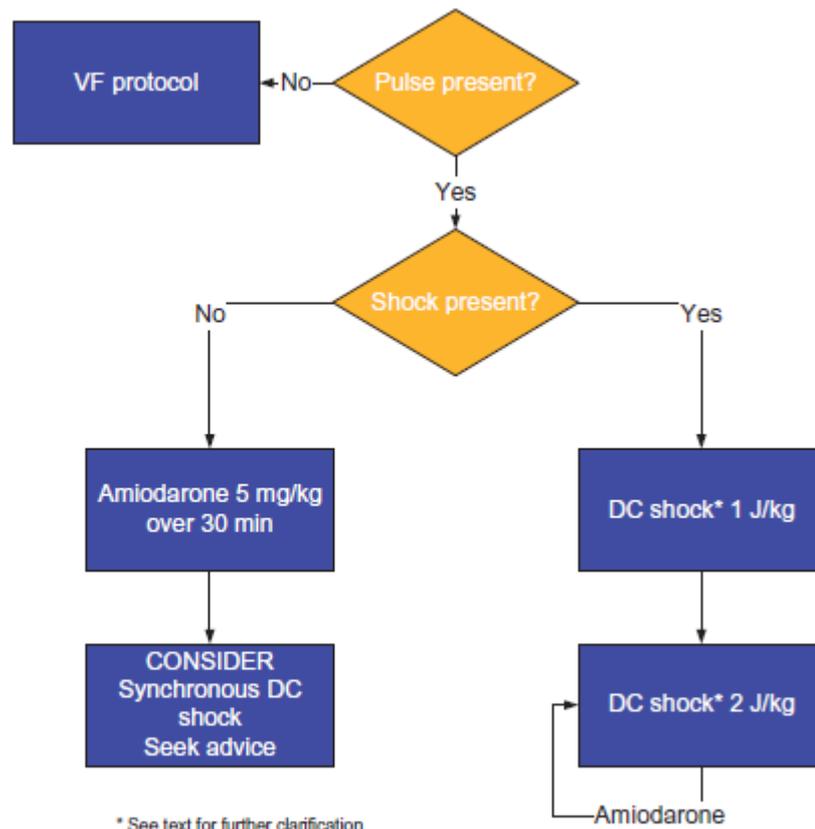


Figure 10.5 Algorithm for the management of ventricular tachycardia

# ADVANCED PAEDIATRIC LIFE SUPPORT: FITTING CHILD

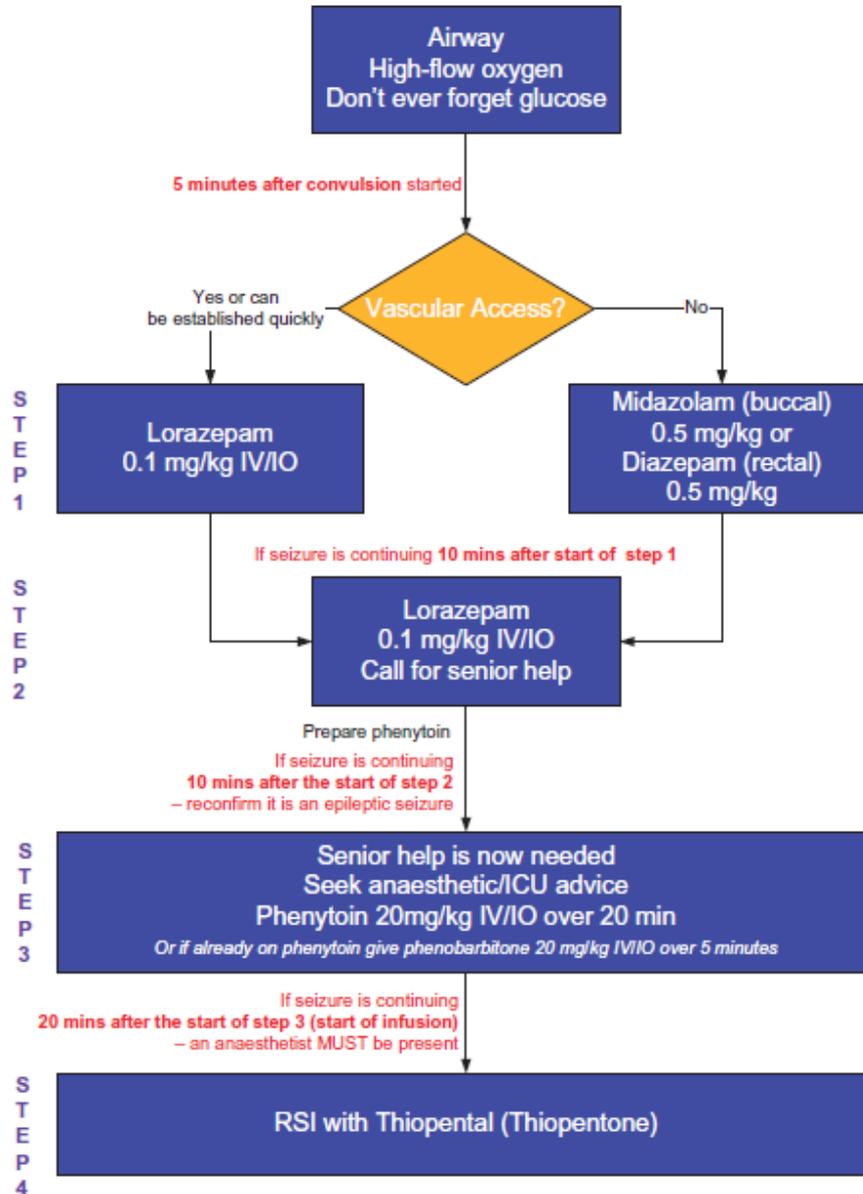


Figure 12.1 Status epilepticus algorithm. ICU, intensive care unit; RSI, rapid sequence induction

# THE UNCONSCIOUS CHILD

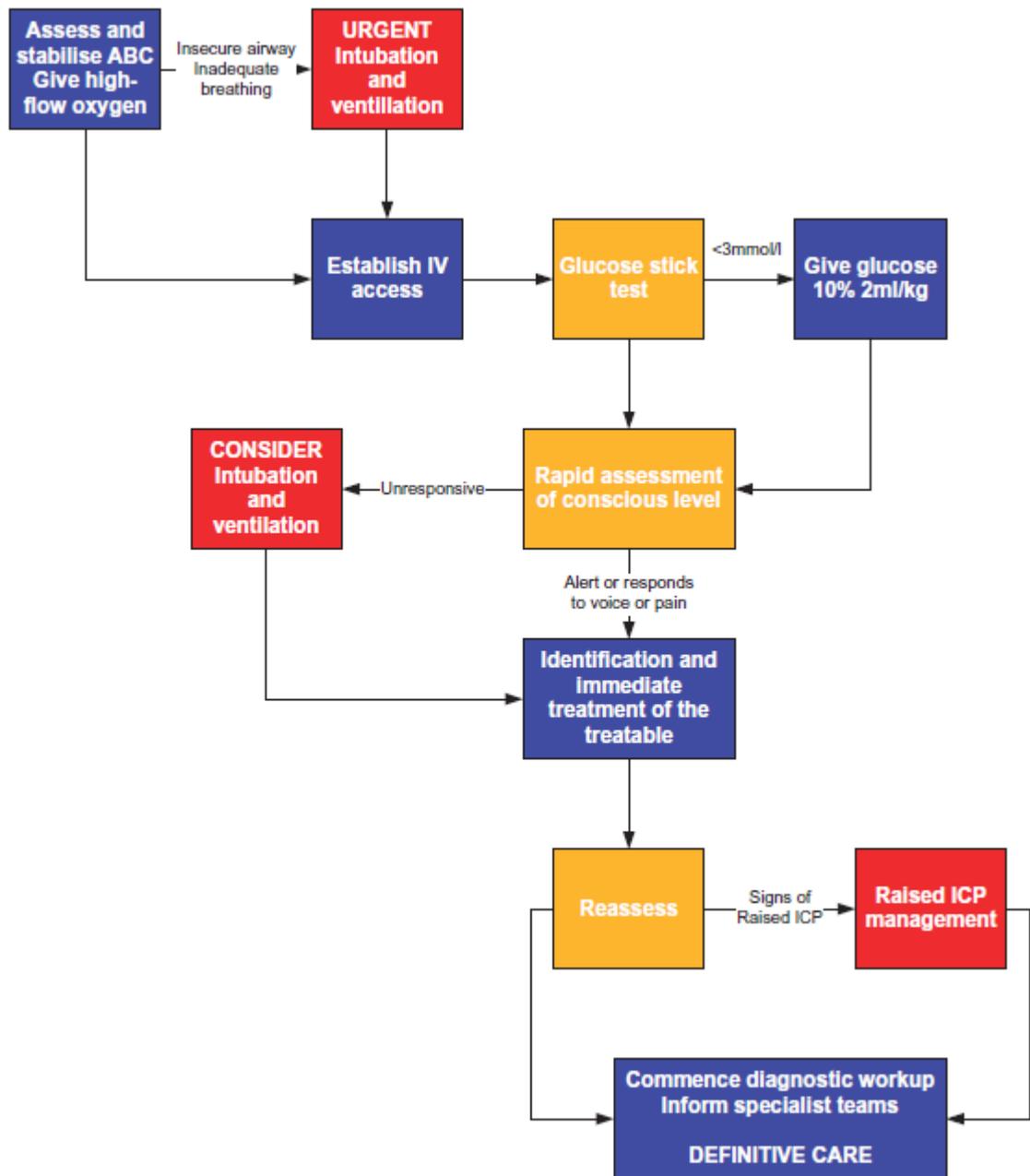
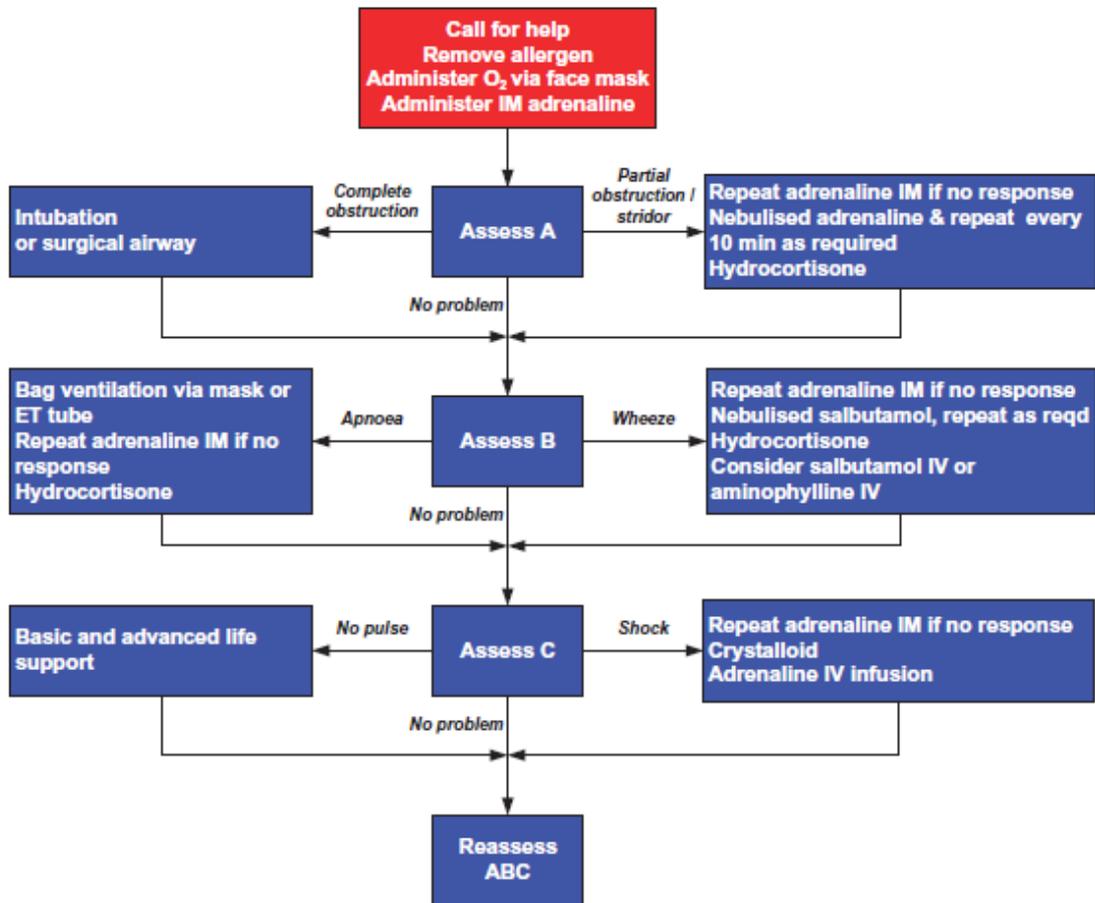


Figure 11.2 Algorithm of the initial management of coma. ICP, intracranial pressure

**The Paediatric Glasgow Coma Scale**

Glasgow Coma Scale (4–15 years)		Children's Glasgow Coma Scale (<4 years)	
Response	Score	Response	Score
<i>Eye opening</i>		<i>Eye opening</i>	
Spontaneously	4	Spontaneously	4
To verbal stimuli	3	To verbal stimuli	3
To pain	2	To pain	2
No response to pain	1	No response to pain	1
<i>Best motor response</i>		<i>Best motor response</i>	
Obeys verbal command	6	Spontaneous or obeys verbal command	6
Localises to pain	5	Localises to pain or withdraws to touch	5
Withdraws from pain	4	Withdraws from pain	4
Abnormal flexion to pain (decorticate)	3	Abnormal flexion to pain (decorticate)	3
Abnormal extension to pain (decerebrate)	2	Abnormal extension to pain (decerebrate)	2
No response to pain	1	No response to pain	1
<i>Best verbal response</i>		<i>Best verbal response</i>	
Orientated and converses	5	Alert; babbles, coos words to usual ability	5
Disorientated and converses	4	Less than usual words, spontaneous irritable cry	4
Inappropriate words	3	Cries only to pain	3
Incomprehensible sounds	2	Moans to pain	2
No response to pain	1	No response to pain	1

# ADVANCED PAEDIATRIC LIFE SUPPORT: ANAPHYLAXIS



Drugs in anaphylaxis	Dosage by age			
	Less than 6 months	6 months to 6 years	6 – 12 years	More than 12 years
Adrenaline IM – pre-hospital practitioners	150 micrograms (0.15 ml of 1:1000)		300 micrograms (0.3 ml of 1:1000)	500 micrograms (0.5 ml of 1:1000)
Adrenaline IM – in-hospital practitioners	10 micrograms/kg 0.1ml/kg of 1:10,000 (infants and young children) OR 0.01ml/kg of 1:1000 (older children) <sup>1</sup>			
Adrenaline IV	Titrate 1 microgram/kg*			
Crystalloid	20 ml/kg			
Hydrocortisone (IM or slow IV)	25 mg	50 mg	100 mg	200 mg

\* 1 microgram/kg given over 1 minute (range 30 seconds to 10 minutes), e.g. 0.5 ml/kg of 1:10,000 adrenaline made up to 50 ml saline 0.9% and run at 1ml/min is 1 microgram/kg/min

<sup>1</sup> The strength of IM adrenaline is not intended to be prescriptive, 1:1000 or 1:10,000 could be used depending on what is practicable. The problem with sticking solely to 1:1000 is that when used in infants and small children, you are then drawing up very small volumes

Figure 9.1 Emergency treatment of anaphylaxis

## SUDDEN UNEXPLAINED DEATH IN INFANCY (SUDI)

- *This will present to you as cardio-respiratory arrest in an infant. Commence CRP as per APLS algorithm unless the baby has rigor mortis or stasis skin changes*
- *You must get senior EM (get a nurse to phone the on-call consultant) and get Paediatric help immediately in this situation –bleep 6666 and ask for paediatric arrest team*

### **The patient**

The paediatric registrar will follow the agreed protocol for the investigation of SUDI. This is in the SUDI pack which the registrar will have. The pack is kept on A2.

### **The parents**

- The child should be dressed and a photograph taken in case the parents should ask for this now or at a later date. The parents should be allowed to hold their child for as long as they wish
- They should be told that their baby was dead on arrival +/- it was not possible to resuscitate him/her
- If they ask questions about the cause etc tell them that you do not have the answers yet – it's too soon
- When they are ready for more information tell them that the Coroner must be notified and that the police will be coming to co-ordinate this

### **The Coroner**

A message must be left on the Coroner's answer phone including the name and personal contact number of the doctor who pronounced life extinct. This is usually a senior member of the paediatric team.

### **Other people who need contacted**

GP, Social worker, Health Visitor

### **You**

The death of a child is always difficult for the staff involved, even if expected. Take time to collect your thoughts after the death. It is often helpful to talk it over with senior nursing or medical members of the team, they often have experience of similar situations and will be able to offer you support. Remember that you can talk to your mentor or one of the consultants at any time if you have questions or difficulties with any the treatment of any patient.

## MENINGOCOCCAL SEPTICAEMIA

- *Refer to the [www.meningitis.org](http://www.meningitis.org) management pathway*

### **Presentation**

Features include fever, myalgia, rigors and confusion. By contrast with neurological features seen in meningitis, those with septicaemia usually have a clear sensorium. Early on clinical features are fever, toxic appearance and tachycardia. With progression, features alter to circulatory failure and shock with poor peripheral perfusion and the gap between core and peripheral temperature increases. Oliguria/anuria may develop and lethargy and confusion leading to coma may result as cerebral perfusion diminishes.

***Please note that hypotension is not a feature of shock in children until a pre-terminal stage is reached, even in the face of significant reduction in circulating volume.***

This is a most fulminant infection. Some children may be symptomatic for several days, others die in <12 hours from the onset of first symptom. Pharyngitis may precede onset in some but others simply get ill and hot. Early recognition is the key to success with requires careful examination of febrile children in a good light, looking for evidence of a purpuric rash in those who are more ill. About 10% of patients develop an initial maculopapular rash (blanches on pressure) prior to the onset of purpura (will not blanch on pressure); in others no rash is present, however, look at the conjunctivae since one purpuric spot in an ill, febrile child is enough to begin therapy.

### **Management**

Suspicion goes more than 50% of the way towards actual diagnosis.

- *Assess ABC and treat. Get senior help early*
- *Administer IV ceftriaxone 80mg/kg– (max 2-4g, over 2-4min). Add in ampicillin /amoxicillin 100mg/kg IV in the under 6 months to cover Neisseria.*

The meningococcal packs are in the paediatric resus area, please complete before antibiotics if it will not unduly delay administration of the antibiotic.