

# APLS: SIMULATION with SKILLS: Chest compressions and Defibrillation. CASE C-1



## History *{initial candidate briefing prior to arrival of child}*

You are called as leader of the arrest team to a cardiac arrest on the children’s ward. The patient, an 11 year old generally well boy, is in hospital for investigation of recurrent syncope.

## Initial Impression *{to tell candidate as child arrives}*

The ward SHO and senior nurse are doing chest compressions and ventilating the child with BVM. The child appears unresponsive.

## Clinical Course *{to be given to candidate as he/she progresses through the assessment and treatment of the child}*

Apnoeic, pulseless, ECG monitor which was already in place shows VT.  
 The child remains in pVT after the first shock but converts to sinus rhythm after the second shock. The child gags on the tracheal tube and a palpable pulse is felt.  
 Guide weight 40kg

## INSTRUCTORS INFORMATION

### Key Treatment Points

<b>Airway</b>	Establish airway patency	<input checked="" type="checkbox"/>
	Oral tracheal intubation	<input type="checkbox"/>
<b>Breathing</b>	Bag and mask with added O <sub>2</sub>	<input type="checkbox"/>
	Bag and intubation with added O <sub>2</sub>	<input type="checkbox"/>
<b>Circulation</b>	IV or IO access	<input type="checkbox"/>
	VF/pVT protocol	<input type="checkbox"/>
<b>General Therapy</b>	BLS interrupted only for shocks/rhythm review	<input type="checkbox"/>
<b>Specific Therapy</b>		<input type="checkbox"/>

### Diagnosis

*Cardiorespiratory arrest – pulseless ventricular tachycardia. Prolonged QT syndrome*

*Skills to be practised and assessed in this simulation: BLS in a child and defibrillation. Candidates should be informed that the skill will be assessed when they prepare to perform it.*

During the simulation, the initial candidate should perform the defibrillation “in real time” and the chest compression should similarly be performed correctly by a different candidate or candidates and assessed. Airway and breathing skills should be actioned as in a simulation but will not be assessed for all candidates in this session.

Following the closure of the simulation with any teaching points clarified as necessary, the rest of the candidates should perform chest compressions and defibrillation skills until competent.

## EQUIPMENT REQUIRED

Resusci junior	Electrodes
Monitor-defibrillator or AED	Pads
Large monitor (optional)	Jelly
Heartsim and interface	

## DEFIBRILLATION - MANUAL

- Check patient and monitor - confirm VF/pVT.
- Apply gel pads or electrode gel. Continue chest compressions until commencing charging of defibrillator
- Select the correct paddles.
- Select the energy required 4J per kg.
- Place the electrodes on to the pads of gel, and apply firm pressure.
- Press the charge button.
- Wait for the defibrillator to charge.
- Shout "Stand back!"
- Check that all rescuers are clear.
- Deliver the shock.
- Replace paddles.
- Recommence CPR immediately.

## OR DEFIBRILLATION – HANDS FREE/AED

- Apply adhesive monitoring electrodes to correct positions
- Check patient and monitor - confirm shockable rhythm
- Continue chest compressions until point until commencing charging of defibrillator
- Select the energy required if choice available.
- Press the charge button.
- Wait for the defibrillator to charge.

- Shout "Stand back!"
- Check that all rescuers are clear.
- Deliver the shock.
- Recommence CPR immediately.

### Correct paddle selection

Most non-AED defibrillators are supplied with adult paddles attached (13cm diameter, or equivalent area). 4.5cm diameter paddles are suitable for use in infants, and 8cm diameter paddles are used for small children. This child will need adult sized paddles

### Correct paddle placement

The usual placement is antero-lateral. One paddle is put over the apex in the mid-axillary line and the other is placed just to the right of the sternum, immediately below the clavicle.

If the anterior-posterior placement is used, one paddle is placed just to the left side of the lower part of the sternum, and the other just below the tip of the left scapula.

### Safety

A defibrillator delivers enough current to *cause* cardiac arrest. The user must ensure that other rescuers are not in physical contact with the patient (or the trolley) at the moment the shock is delivered. The defibrillator should only be charged when the paddles are either in contact with the child or replaced properly in their storage position.

A high ambient oxygen concentration may lead to fire through "arcing". Any free-flowing oxygen (i.e. through a bag mask system) should be removed/turned off.

### CHEST COMPRESSIONS

Ensure that candidates are clear about the technique for chest compressions – lower half of the sternum. Two fingers or thumbs for an infant and the heel of one or two hands for a child. The number of hands is the candidate's choice, but should be adequate to depress the chest by at least one third of its diameter.

Ratio 15:2 for 1 minute, with a compression **rate** of 100-120 per minute