

SIMULATION CASE PC-4

Learning outcomes:

By the end of this simulation the candidates will:

- Understand management of PEA
- Understand management of hypokalemia
- Understand the importance of a team approach to cardiac arrest management
- Understand the importance of effective communication during cardiac arrest

Simulation focus: Cardiorespiratory arrest – PEA, secondary to hypokalaemia following excessive fluid resuscitation without potassium.

Timing: 0-3 minutes: introduction; remaining time: split equally between simulation and debrief

Introduction [Environment and Set]

Prior to the start of the simulation: one instructor to:

1. [Environment] Brief candidate group to *check the Environment*:

Room	Candidates to set up the room appropriately	
Equipment	Candidates to check required equipment present and accessible	

Equipment list:

In addition to generic equipment list:

- Appropriate size manikin to be ready for simulation in room and covered until simulation commences

2. [Set] Give History

Rahim is a 14-year-old male who has been transferred to ED at the request of the surgical team. He has been treated in the referring hospital for appendicitis. He was deemed too unwell to transfer overnight and has been resuscitated in the referring hospital. He was given 7 litres of fluid during initial resuscitation along with broad spectrum antibiotics. The transferring medical crew mention that during the 2 hour transfer he has become more tachycardic, pale and in pain. He has continued to vomit despite the NGT, became progressively more confused and drowsy. The team report he became unconscious and arrested just prior to arrival.

Then leave the room for candidate group to prepare and after 2 minutes, return with instructor team and commence simulation

[Dialogue] Simulation

Initial handover *{to tell candidate on your arrival with the child as Transfer crew SBAR to Team Leader}*

Situation	Cardiorespiratory arrest – PEA, secondary to hypokalaemia	
Background	Rahim is a 14-year-old male transferred with appendicitis. He has been resuscitated and treatment started with broad spectrum antibiotics. He became unconscious and arrested prior to arrival.	
Assessment	A	Patent
	B	Apnoeic
	C	Pulseless
	D	
	E	
Recommendation	Needs resuscitation	

Clinical course *{to be given as the simulation progresses}*

There is sinus rhythm on the monitor, but the child is motionless and apnoeic. No pulse can be felt. The child remains in PEA until oxygenation is established and adrenaline x 2 has been given.

Airway & C-Spine	Establish airway patency		
	Oral tracheal intubation		
Breathing	Bag and mask with added Oxygen		
	Bag via TT with added Oxygen		
Circulation	PEA protocol		
	IV/IO access		
Specific therapy	Uninterrupted BLS		
	Once ROSC is obtained and child oxygenated, manage hypokalemia		
Handover	S		
	B		
	A		
	R		

[Closure] Debrief

Using the learning conversation, carry out the debrief of both the technical and non-technical elements of the simulation.

The debrief will be for the team as a whole and should focus on some or all of the following:

- Technical skills in an A, B, C, D, E format and guided by the KTPs; in particular the safe and effective demonstration of all continuously assessed skills:
 - BLS
 - Defibrillation
 - Airway management
- Non-technical skills, including qualities of team membership and leadership:

Team members	<ul style="list-style-type: none">• Clear communication• Respect• Flexibility• Assertiveness• Ability to listen
Team leaders	<p>All of the above, plus</p> <ul style="list-style-type: none">• Full overview of all aspects associated with child, parents and team• Prioritises according to KTPs• Summarises and re-evaluates

- Feedback on Environment, where required

At the end of the debrief, give the opportunity for candidates to ask questions, answer these and then summarise the key points.

Assessment

Refer to the *Instructor guidance on simulations* document for a guide to the assessment of the simulation station. These assessments should be documented on the paper-based or electronic system for the final faculty meeting. Any scores of *serious concern* should be reported immediately to the course director.

Notes:

It is possible to encounter this scenario which is based on a real situation. An appendix mass only occurs if the child's immune system has started to wall off the source of sepsis creating a mass. This does not always occur and perforated appendicitis with generalized peritonitis can create life threatening sepsis. Over resuscitation with bolus's of NaCl can result in hypokalaemia. PO correction should be considered if mild hypokalaemia is present ($K > 2.5 \text{mmol/l}$) and PO route can be tolerated. If mild hypokalaemia and PO not tolerated, replacement can be given with IV fluids (10-20mmol/500ml NaCl). If severe (potassium $< 2.5 \text{mmol/l}$) administer correction at 0.2mmol/kg of potassium as a slow push intravenously or IO followed by a flush. Maximum total dose recommended is 20mmol/hr. Serum potassium must be measured **at least** every 2 hours.

THE USE OF STRONG POTASSIUM INFUSION TO CORRECT LOW SERUM POTASSIUM MAY BE REQUIRED BUT WILL NEED CARDIAC MONITORING DUE TO POTENTIAL FOR CARDIAC ARREST.

Review your trust policy.