## STATION 1

## SIM: Local Anaesthetic Toxicity/Cardiac Arrest

Double Station

3 Mins Reading Time

Up to 17 Mins Simulation

Stop 2 mins before end of SIM for Candidate to describe the refer the patient to an ICU colleague

**Participants:**

1x RMO

1x ED Reg (arrives when cardiac arrest buzzer pushed, or within 1 minute otherwise)

3x Nurses

Confederate – to relay examination findings/reguide scenario/provide VBG result/ask the candidate to refer the patient to ICU Consultant 3 mins before the end of the station

**Candidate Instructions:**

You are called to the resus room where an RMO is suturing a large 20cm thigh wound on a 45 year old female. She sustained this isolated injury when she fell off a ladder at home, she did not sustain a head injury. The nurse in charge has called to say that the patient has become acutely confused. In this scenario you are the team leader and will have 3 competent senior nurses and the RMO as your team. There will be a confederate in the room who will relay examination findings to you as appropriate. You are expected to be the TEAM LEADER in this scenario and will not be expected to perform any complex tasks yourself –your task is to direct your team. You may examine the patient yourself. **You MUST NOT intubate the patient during this scenario**

**RMO Instructions**

You are a junior RMO who has taken a patient into a resus room to suture a large leg laceration. You have injected 12 x 5ml 1% lignocaine vials . The patient was unmonitored and had no obs/iv access during the procedure. They became confused and complained of tingling in their face, before becoming inconscious. You weren’t aware of the maximum dose of lignocaine and thought it was a “safe drug”. She had no other injuries. You are able to insert a canula/do bloods/perform CPR if asked but have no basic airway skills.

**Registrar Instructions**

You heard there was an arrest and came to help. You do not know the case at all. You have all of the skills to do IV lines and drug administration/CPR/BVM and advanced airway mx. After the 2nd shock you should state **“***there’s a bit of a leak around the mask, and we’re not ventilating as well as we could”.* This is to prompt the use of airway adjuncts if not already used.

**Nurse 1/2/3**

You are all resus trained nurses – you can BVM/put in lines/do obs/draw up and give drugs and use the defibrillator. You should perform all tasks as you would do usually in resus. If you are asked to give a medication/fluid/shock and no dose is given you should ask for the dose to be clarified.

**Confederate Instructions**

- Tell the candidate what examination findings are present

 - Airway patient, no resps, Pulseless, GCS 3, U on AVPU, no signs of trauma

- After 4th Shock ROSC

 - at subsequent pulse check will be spont resp 10/min, groaning, moving limbs, wound on leg, no other abnormal findings

- Give patient VBG displaying HAGMA/Glucose 8.0 if requests

- If candidate starts to prepare for intubation then remind them that intubation is not permitted in this SIM

- Cease the scenario 2 minutes from the end and ask the candidate to hand over the patient to an ICU Consultant.

**SIM Set Up**

**Equipment**

**-** Adult Mannequin with simulated leg wound, unconscious on arrival

- ISIMulate

- Suture Trolley – set up to look like someone is about to suture after having injected LA ++++

 - Dressing pack

 - Syringe and Needle

 - 12x empty 1% lignocaine vials

 - Suture material

 - Betadine

- Venepuncture and cannulation equipment/blood tubes and VBG

- IV fluids NaCl 0.9% 1L bags

- Intralipid (simulated with milk in 100ml bag)

- Meds: Benzodiazepines/Sodium Bicarbonate

- Defibrillator

- Monitoring leads/pads

- O2

- BVM

- Guedel/NP

- Computer with access to AMH for drug doses

**Mannequin/Observations/Monitor Set up**

**Initial obs/exam (arrested patient)**

- Mannequin wearing underwear and upper half clothed, lying on bed

- No response to voice/pain/GCS3

- VF on monitor when attached

- Unrecordable sats/BP if taken

- Resps – zero

- No signs of trauma

- Wound on left thigh 20cm, not bleeding

**ROSC Obs**

P120

Wide complex SR

BP 70/50

Sats 90%

RR 10

**Scenario Progression**

- Patient unmonitored in resus bay

- RMO to state that she was complaining of tingling around her mouth and got really confused before she became unconscious

- Nurse in room to state that she has just stopped breathing

- Registrar arrives in the room

- DRSABC approach to assessment

- Identification of cardiac arrest by candidate – VF

- CPR:Ventilations established, shockable side of algorithm followed

- Each time rhythm check approaches should use a verbal prompt for example: *“Rhythm check approaching, compressions continue, free flowing oxygen away, charging, cease compressions, shockable rhythm, everyone and myself clear, shocking* – delivers shock – *recommence CPR and ventilations”*

- IV access gained/VBG/Glucose

- Consideration of 4H/4T’s or statement that likely cause is toxicity to LA

- Administration of adrenaline every second cycle after 2nd shock

- Early administration of sodium bicarb boluses

- Consideration of Intralipid bolus

- Airway person to state after 2nd shock: “I don’t have a very good seal” with expectation that Guedel airway inserted

- Administration of Amiodarone after 3rd shock

- After 4th shock rhythm changes back to sinus with wide complexes IF BICARB has been administered, otherwise will remain in VF till given

- Completion of 2 mins of CPR necessary prior to rhythm and pulse check

- Strong pulse present at rhythm check, pt is groaning

- Post ROSC care – O2/IV/obs/inotropes/ECG/Bloods/Intralipid infusion/further HCO3 as reqd

- Consideration of disposition to ICU

- At 15mins the ICU consultant arrives and the scenario is stopped to allow a handover of information via ISBAR format:

|  |  |  |
| --- | --- | --- |
| **Marking Criteria** | **Marks Possible** | **Marks**  |
| Introduces Self | 1 |  |
| Clarifies Situation –asks RMO/nurses | 1 |  |
| Assesses response to stimulus | 1 |  |
| Assesses airway  | 1 |  |
| Assesses breathing – absent breathing | 1 |  |
| Institutes BVM ventilation | 1 |  |
| Assesses circulation – absent pulse | 1 |  |
| Institutes compressions (30:2 Ratio) | 1 |  |
| Cardiac Arrest Buzzer/Call/Announcement | 1 |  |
| Attaches cardiac monitor – correct pad position | 1 |  |
| Charges defib BEFORE rhythm check to minimise pauses in CPR |  |  |
| Identifies VF on monitor | 1 |  |
| Defibrillation at 200J AS SOON AS PADS APPLIED/RHYTHM ESTABLISHED  | 1 |  |
| Demonstrates safe technique* All Clear
* Oxygen Away
 | 2 |  |
| Minimises hands off time with correct verbal procedure/charging defib prior to rhythm check | 1 |  |
| Immediately resumes CPR 30:2 | 1 |  |
| Inserts an IV line | 1 |  |
| Withdraws blood for VBG/glucose minimum | 1 |  |
| Makes statement regarding consideration of 4H/4T’s | 1 |  |
| Identifies that LA toxicity most likely cause | 1 |  |
| Adrenaline 1mg post 2nd shock | 1 |  |
| Amiodarone 5mg/kg post 3rd shock | 1 |  |
| Considers the use of NaHCO3 Boluses | 1 |  |
| Considers the use of Intralipid 100mls 20% then infusion. Can look up the dose (0.25-0.5 ml/kg/min until HD stable). Can repeat boluses 1-2x at 3-5min intervals before infusion started, max 8ml/kg | 1 |  |
| Considers fluid boluses 500-1000mls stat | 1 |  |
| Inserts Guedel airway in response to nurses comment that “I don’t have a very good seal” | 1 |  |
| Recognises rhythm change after 4th shock - Sinus | 1 |  |
| Completes 2 mins of CPR regardless of rhythm change  | 1 |  |
| Dumps defib charge prior to checking pulse when shockable | 1 |  |
| Identifies Pulse present  | 1 |  |
| Institutes post resus care* ABCD examination
* Obs
* O2 via FM
* IVF/access/bloods/VBG
* Further HCO3/Intralipid infusion as reqd
* ECG
* Discussion with family
 | 4 (any 4 points) |  |
| Considers disposition to ICU | 1 |  |
| Referral to ICU Consultant* Introduces self/clarifies who talking to
* Situation
* Background
* Assessment
* Response
 | 5 (1 for each) |  |
| General Performance* Calm and in control
* Gives clear instructions (e.g doses, tasking to specific people)
* Use of closed loop communication
* Consideration for staff (e.g CPR rotation for fatigue)
 | 4 (1 for each) |  |