SAFETY

simulation for medical practice

SIMULATION APPROACH FOR EDUCATION AND TRAINING IN EMERGENCY

Epilepsy

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Scenario Description

Learning Target	Description	Participants
Medical: - Diagnosis, management and treatr patient with a first time generalized clonic seizure which evolves to statu epilepticus of a patient **CRM:** - Call for help - Use the 3Cs to communicate (citing names, clear instruction close the loop) - Situation awareness (be aware of the initial situation and re-asses) - Share the mental model and gather team feedback - Organise team • Distribution of roles • Distribution of tasks	**Where:** -Emergency department **Who:** -Patient with first generalized tonic-c seizure	-Medical student 5th or 6th year or resident 1st year -Nurse student 4th year

Notes:
This scenario can be performed either by the whole team in different roles (Medical and nurse role) or one participant (medical or nurse role) and an actor.

Scenario Briefing

Briefing (everyone)

A 70 year-old male is brought to the emergency department with a complaint of severe headache of several hours that has worsen and it is now unbearable.

Medication: enalapril, ipratropium bromide and atorvastatin

He has a past medical history of smoking, hypertension, chronic obstructive pulmonary disease and dyslipidaemia.

Additional Briefing (individual positions)

Medical student or resident:
-You are working in the emergency department. You are asked to assess a patient that has been brou a complaint of asthenia and dizziness. You will work with a colleague nurse.

Nurse student:
- You are working in the emergency department. A patient with a complaint of asthenia and dizziness just arrived. You are asked to take care of him. You will enter the room with the medical student. In the room there is a nurse assistant

Case Briefing (role-players)

Emergency doctor (instructor, optional):
-You are a senior doctor at the emergency department. You will brief and ask the participants to take of the case.
Then, you will leave to take care of another patient. Afterwards, your role is to assist the participants if they ask for help and to rescue the scenario if necessary.

Nurse assistant: (confederate)
- You are nurse assistant at the emergency department. You will be in the room when the participants arrive.
-Your role will be to help the participants specially to guide them with material and medication location.
-You can guide with questions (hidden hints).

If the hints are ignored, help with more direct comments: "Last time I saw that, the team did…" (only correct hints!).

And finally, after a faked phone call: "The consultant is coming. He told us to do…"

Notes:
- This scenario briefing is for 1 or 2 students (two medical, medical and nurse, nurse, and nurse).
- If the only participant is a medical student, then, the nurse assistant will be replaced by an emergency nurse that will remain in the scenario from the beginning helping the student (confederate). Her duties would depend on the country the case is intended to be performed.

Script Sim Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
Simulated Patient: -Preference: Actor to simulate the seizures, assure communication with learners and neurological evaluation at all times. -Other options: Manikin, but be sure that it is possible to simulate a seizure, allows communication and learner is aware of limitations of neurological evaluation. -TIPS: Patient dressing code according to age (ex. Glasses, wing) **Specific material**: Apart from the standard emergency room motoring-material-equipment - Prepared lab-results: full blood count, glucose, ca+2, Mg+2, Na+, K+, urea, creatinine, liver function, creatinine-kinase, lactate, arterial blood gas - Prepared 12-lead-ecg -Anticonvulsant medication: lorazepam, clonazepam, midazolam, diazepam, phenytoin, fosphenytoin, phenobarbital, sodium valproate, levetiracetam, lacosamide - Patients medication plan -Cognitive aids for anticonvulsant medication doses	- Standard ER-room with monitoring, equipment, stretcher - The simulator/patient is lying on a stretcher -Patient´s medication plan	When the scenario starts, the patient is not monitored, has neither an intravenous line nor oxygen. The patient is conscious. Be aware that any problem or delay in the reply of the patient to the participants' questions may look like the patient is in worse condition than the planned.

Notes:

Scenario Saver

How to react if the medical problem is not identified	How to react if the medical problem is identified too quickly	Other comments, material needed for savers (e.g. white coat)
If the participant/s are not able to reach a diagnosis or if they reach a diagnosis but they don´t treat the patient accordantly, the confederate can give hints and guide the participant through all the steps for the resolution of the case. The patient will not die. The confederate can guide with questions (hidden hints): “What does …. mean?” “Is it also possible to do … ?” If the hints are ignored, help is also possible with more direct comments: “Last time I saw that, the team did…” (only correct hints!) And finally, the confederate can fake a phone call to the consultant and say afterwards: “The consultant is coming. He told us to do…”	- A good performance should not be slowed down unnecessarily! - When the scenario is solved, regardless of the timing, the neurologist (confederate) will enter the scenario and the participants will summarise the case. If something relevant is missing the confederates will point it out	-If the participants are starting a treatment or doing an action that might be harmful for the patient, the confederate will give hints. -In worst case a team member in the role of the consultant emergency medicine will enter the scenario to reconduct the situation. -A radio connection between the team in the control room and the confederate should exist. -Two real mobile phones are highly recommended to call the cardiologist from the scenario.

Scenario End Criteria

Scenario ends when …	Timing	Expected (Key) actions
All of the following statements are true: • The diagnosis of status epilepticus is made • Treatment was given (two doses of benzo-diazepines **or** one dose of anticonvulsant drugs **or** general anaesthesia with intubation) • Aetiology diagnosis has planned / started (lab tests, CT scan) **or** specialised help and destination of patient has been suggested (calling UCI/neurologist) When this is fulfilled, a team member in the role of the consultant emergency medicine enters the room and requests a handover (SBAR, ABCDE and SAMPLER)	-The scenario is planned to last between 10-15 minutes. Instructors could help if the previous points have not been achieved within the stipulated time. -Instructors could help if the previous points have not been achieved within the stipulated time.	– Diagnosis – Adminsitration of anticonvulsive drugs – Respiratory supportive treatment (oxygenation/ventilation, intubation) – handover

Notes: Don't let the patient die

Simulator Set-Up-Part 1

	Phase 1 Start	Phase 2 seizure	Phase 3 recovery
Vitals	Eyes blinking Airway clear Resp. Rate: 20/min SpO2: 97% HR: 100/min ECG: Sinus rhythm BP: 180/110 mmHg Temp: 36,1 °C Glycaemia: 150mg/dl	Eyes closed Patient/simulator is shaking Airway partial closed (snoring) Resp. Rate: 10/min SpO2: 92% (95% with O2) HR: 100/min BP: 180/110 mmHg (CO2: 60 cm H2O)	Eyes slow blinking Airway open Resp. Rate: 15/min SpO2: 95% (98% with O2) HR: 90/min BP: 180/110 mmHg (CO2: 45 cm H2O)
Text for patient	Patient is complaining that he doesn´t feel well. If patient is asked why he has been brought to the emergency department, he will answer that he has a severe headache that has started suddenly some hours ago and became more and more severe and invalidating, and now it is unbearable. He has no other complaints.	Patient unresponsive During seizure no reaction to verbal or pain stimuli	Initially unresponsive (30-60 seconds) Patient regains consciousness slowly, but never exceeds somnolence, confused, desorientated.
Other info		Simulator can be shaked externally	
Management during scenario		seizure will stop when • benzodiazepine (iv, nasal, im) are delivered • other anticonvulsive medication is given (according to local protocol) • General anaesthesia / intubation is possible, when asked for -> end of scenario • Trigger for next step is application of benzodiazepine or anticonvulsive drugs	Trigger for next step is time or level of consciousness

Simulator Set-Up-Part 2

	Phase 4 Status epilepticus	Phase 5 final
Vitals	Eyes closed Patient/simulator is shaking Airway partial closed (snoring) Resp. Rate: 8/min SpO2: 83% (88% with O2) HR: 100/min ECG: Sinus rhythm BP: 180/110 mmHg (CO2: 60 cm H2O) Temp: 36,1 °C Glycaemia: 150mg/dl	Eyes closed Airway partial closed (snoring) Resp. Rate: 8/min SpO2: 88% (94% with O2) HR: 100/min BP: 180/110 mmHg (CO2: 60 cm H2O)
Text for patient	Patient unresponsive During seizure no reaction to verbal or pain stimuli	Convulsions stop, but patient remains unresponsive
Other info	Simulator can be shaked externally	
Management during scenario	• seizure will not stop after application of benzo-diazepine (iv, nasal, im) • only anticonvulsive medication stops the seizure (depending on local guidelines) • If antihypertensive drugs are administered, blood pressure will decrease depending on the drug and dose • General anaesthesia / intubation is possible, when asked for -> end of scenario • Trigger for next step is application of anticonvulsive drugs	• Patients respiratory status deteriorates with/without oxygenation • Only ventilation improves oxygenation • General anaesthesia / intubation is possible, when asked for At the end of the scenario the emergency physician (team member) enters the room and requests a handover (following the SBAR-scheme including ABCDE+SAMPLERS)

Abstract

Learning Target:	-Diagnosis and treatment of a patient with a first time generalized tonic-clonic seizure which evolves to status epilepticus seizure
Description:	-Signs and symptoms recognition -Basic monitoring -Pharmacological treatment of generalized tonic-clonic seizure and status epilepticus seizure
Participants:	Medical student 5th or 6th year or resident 1st year and/or Nurse student 4th year
Case Briefing:	A 70 year-old male with a past medical history of smoking, hypertension, chronic obstructive pulmonary disease and dyslipidaemia has serious, unbearable headache
List of Material:	- Emergency room basic monitoring, treatment, and lines. - Actor - Clothes and wig to create an impression of a 65yo male -Medication: anaesthesia induction, anticonvulsant and antihypertensive -Cognitive aids
Set-Up Room	- Emergency room -Patient lying on bed, no monitored, without oxygens and lines -A confederate in the room (a nurse-nurse assistance).
Set-Up Simulator:	Vital signs remote control. Initially, patient is not monitored. Once patient is monitored, she is hypotensive and desaturating
Scenario Saver:	Neurologist (confederate)
Scenario End Criteria:	-Management of status epilepticus seizure with success -Propper oxygenation/ventilation and resaturation of the patient
Management during Scenario:	From the control room. It is paramount to have a way to communicate with the confederate.
Other:	Limitations - If actor, intubation - In manikin: seizures and neurological examination