SAFETY

simulation for medical practice

SIMULATION APPROACH FOR EDUCATION AND TRAINING IN EMERGENCY

R5.1 Training material for the first exceptional module

Summary

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Sim-Scenario

Name/Nr. Toxicology - MISSING DOCTOR

Scenario Description

Background: *Nephrology and Dialysis Unit: 82-year-old woman with chronic kidney disease due to unproven nephropathy (probable diabetic nephroangiosclerosis), on three-weekly hemodialysis, pluricomplicated type II diabetes mellitus with severe obliterating arterial disease of the lower limb requiring amputation of the right thigh, awaiting revascularization of the left lower limb. In treatment with Fentanyl patch (25 mcg/h) and 200 mcg tablets.*

Nurse: Hello Miss Lucy, how are you feeling today, are you ready to start the dialysis session?

Mrs Lucy: Hmm... (The patient stammers and seems to have difficulty understanding).

Nurse: Oh, I see we're not in the mood today. Don't worry, you will see that with the new therapy you will be better.

At the end of the session, however, a persistence of the alteration of consciousness was observed, sometimes with drowsiness and hallucinations.

Nurse 1: Help, call a doctor.

Nurse 2: What's going on? The on-call doctor is doing a consultation in the emergency room.

Mrs. Lucy: gets confused and has tremors.

Nurse 1: Help me! this morning she didn't seem in the right mood but at the end of the session she got worse.
Since starting the new therapy I have noticed a change.

Nurse 2. Keep calm. Let's evaluate the pupils and measure new vital parameters.

Nurse 1: The pupils are miotic. In the meantime I try to remove the Fentanyl patch.

Nurse 2: Look! (NIBP 90/60 mmHg,   HR 88 bpm, SpO2 91% , Temperature 37.3 °C)
Shall we make a blood gas?

Nurse 1: Yes, that's a good idea, meanwhile we call a doctor.
Moreover, please prepare a source of oxygen and approach an emergency cart.

Nurse2: "ok, everything is prepared. I brought you a Guedel cannula and checked the suction. Now I'm going to call the intensive care unit right away.

(While the colleague goes to the doctors' room, the nurse places the patient on 100% oxygen therapy and places the Guedel cannula)

Nurse 2: Good morning, is this the intensive care unit?

Doctor : Hello, who am I talking to? I'm Dr. M.A.

Nurse 2 : Doctor? I am a nurse of the hemodialysis department, there is a sleepy patient who has worsened after treatment. My colleague has removed the fentanyl patch and measured her vitals, but consciousness seems to be getting worse. She has HR 88, NIBP 90/60 and SpO2 91%. Our doctor on call is out for a consultation. Can you come?

Doctor: We'll be right there!

Nurse 2: How's it going? I called ICU and they are on their way.

Nurse 1: SpO2 has risen to 95%, but blood pressure is still low.
Do we want to take another venous access?

Nurse 2: OK, I'll take it.
The two nurses, while waiting for the doctor, check that everything is available.

Sim-Scenario

Name/Nr. TOXICOLOGY CASE – MISSING NURSE

Scenario Description

Background: *A general surgery consultant and his resident are doing the round in the postoperative section of their ward and are about to visit Mr. Brown who has undergone a total laparotomic colectomy just 3 hours before.*

Consultant: Good afternoon Mr. Brown, how are you feeling?

Mr. Brown *[doesn't answer, he's just lying still on his bed]*

Consultant gently shakes Mr. Brown, thinking he's just sleeping.

Mr. Brown *[remains motionless]*

Consultant *[takes a look to the multiparametric monitor on the bedside table. He immediately notices that SpO2 is very low and the last NIBP is 80/40. He immediately tells the resident to call the nurse.]*

Resident *[returning few seconds later]***:** I've not seen any nurse in the kitchen, he may have left the ward to take a patient back from the OR.

Consultant: Allright…we are on our own. Call the Rapid Response Team and take the emergency cart here, quick!

Resident: Ok doctor

Consultant *[In the meantime he performs airway patency check and jaw thrust]*

Resident: I'm here, tell me how can I be of help.

Consultant: Let's insert a Guedel cannula first then take out an oxygen reservoir mask and set it at 100%.

Resident *[performs what he is being told to do]*

[SpO2 rises to 93%]

Consultant: What can be happened? Let's do a full examination. *[He observes the patient thorax moving in an abnormal bradypneic and superficial pattern, he palpates the chest finding no signs of pneumothorax, auscultation is normal but respiratory rate is 8 breaths/min, SpO2 is still 93%]* Allright, the respiratory rate is very low…can you gently assist the patient with an ambu bag? The patient is fasting, but be sure you have suction at hand.

Resident *[begins to assist the patient with the ambu bag]*

Consultant *[check pulse, which is very subtle, and measures NIBP again which turns out to be 75/50]* I'll start some IV fluids in the meantime and then I'll go for a neurologic examination. *[GCS turns out to be E1 V2 M4, pupils are frankly myotic]*
Resident: Look at the pupils! May the patient have been suffered from a pontine infarction?

Consultant: Pontine infarction? What exactly does that mean?

Resident: Nevermind…let's complete the examination to have a better idea of what might have happened…

Consultant *[completely uncovers the patient and find an elastomeric pump connected to a second IV line which has been hidden by the sheets until that moment]* Look what we have here…this elastomeric pump have been prepared with 4 ampules of morphine to be administered in 48 hours BUT LOOK! The pump is already empty!!

Resident: It looks like we have an overdose case here…

Consultant: Right, let me check if I can find the proper antidote in our cart…how was it called…*[he keeps searching in the drawers]*

Resident: It's naloxone doctor, if you find it we should give the patient 0.1-0.2 mg every 2-3 minutes until we see a proper response.

Consulant [finds the naloxone ampule, dilutes it with saline and administers the first 0.2 mg]

Mr. Brown *[does some spontaneous but uncoordinated movements, respiratory rate increases a bit]*

Consultant: Let's make another 0.2 mg push.

Mr. Brown *[opens his eyes and regain a proper breathing pattern]* What has happened? I feel very drowsy…

Consultant: You should ask your anesthesiologist…

[In the meantime the RRT enters the room]
RRT leader: Hey, have you called for our help? What has happened?

Consultant: Well, I think we have just faced an overdose case, but we managed it with oxygen and…what was the name again?

Resident: Naloxone, doctor…

RRT leader: Allright, was it an opioid overdose then?

Consultant: Yes, but the patient is feeling better now. Let's check parameters again. *[NIBP is 110/60, FC is 80 bpm, SpO2 is 98% in room air]*

RRT leader: Good, don't hesitate to call us if you need. And by the way…where is your nurse?

Consultant: I wish I knew too…

Sim-Scenario

Name/Nr. Infant dyspnea - SPECIAL

Scenario Description

Learning Target	Description	Participants
Medical: - **Recognizing** dyspnea - Primary care of a dyspneic infant - adequate mask ventilation CRM: - SA - Dealling with missing experienced teamleader - Communication -	Where: - ED - - - Frame conditions: - Day shift - No experienced teamleader available on site -	- Students - - - Who: - 2 doctors - 1-2 nurses - - -

Notes: Needs an actor for the role of the mother, can be a student
Depending on available options and ressources, experienced teamleader can be summoned via telemedical devices

Sim-Scenario

Name/Nr. Infant dyspnea - SPECIAL

Scenario Briefing		
Briefing (everyone)	**Additional Briefing (individual Positions)**	**Case Briefing (Roleplayers)**
6 months old baby brought to the ED by worried parents. 3 days history of coughing and upper airway infection. Since today increasingly difficulties drinking and "strange noises"		Mother – very worried, but can be calmed down. Don't interfere too much with medical team.

Notes: Role of mother can be missing – just use baby simulator

Sim-Scenario

Name/Nr. Infant dyspnea - SPECIAL

Script Sim Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
- pediatric ED cart - - - - Baby simulator (NOT newborn) AND (optional) - SP - - - -	- ED stretcher with actor, sim on arm - alternatively sim on baby bed - - - - - - - - - -	- dressed - - - - - - - -

Notes:

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Sim-Scenario

Name/Nr. Infant dyspnea - SPECIAL

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)**
Send in another colleague or nurse	Mother can be a bit more stressful, binding resources	Depending on setup, telemedical equipment

Notes:

Sim-Scenario

Name/Nr. Infant dyspnea - SPECIAL

Scenario End Criteria		
Scenario ends when…		
- patient is ventilated - depending on curriculum maybe also intubate the patient? - volume is given - - - - - - -		

Notes: Don't let the patient die!

General note – end the scenario saying:

"The patient is now going to be taken care of, thank you for solving the case"

Sim-Scenario

Name/Nr. Infant dyspnea - SPECIAL

Simulator Set-Up, Steering
(duplicate this page if necessary)

	Phase 1 Start	Phase 2 Worsening	Phase 3 Ventilation	Phase 4 stabilisation
Vitals	HR: 170 bpm, SR BP: 61/32 mmHg; SpO2: 90 %, Resp. Rate: 52, Temp: 38,1°C; Cyanotic Auscultation: Ronchi over whole lung	HR: 170 bpm, BP: 61/32 mmHg; SpO2: 88 %, Resp. Rate: 70, Temp: 38,1°C More cyanotic Auscultation: Ronchi over whole lung	HR: 170 bpm BP: 61/32 mmHg; SpO2: 82 %, RR: 12, apnea episodes, Temp: 38,1°C More cyanotic Auscultation: Ronchi over whole lung	HR: 150 bpm BP: 61/32 mmHg; SpO2: 91 %, Resp. Rate: ventilated Temp: 38,1°C Cyanosis recedes Auscultation: Ronchi over whole lung
Text for patient	Description of patient: Limp, pale Retractions breathing Rhonchi over whole lung			
Other info				
Management during scenario				

Notes: Rather mild deterioration, otherwise possibly too stressful for participants

Sim-Scenario

Name/Nr. Infant dyspnea - SPECIAL

Abstract	

Learning Target:	Management of INFANT DYSPNEA SPECIAL situation – no senior available
Description:	Bronchiolitis of young infant
Participants:	- 2 doctors - 1-2 nurses
Case Briefing:	6 months old baby brought to the ED by worried parents. 3 days history of coughing and upper airway infection. Since today increasingly difficulties drinking and "strange noises"
List of Material:	- pediatric ED cart - Baby simulator (NOT newborn) AND (optional) - SP
Set-Up Room	- ED stretcher with actor, sim on arm - alternatively sim on baby bed
Set-Up Simulator:	- dressed
Scenario Saver:	NO senior doctor available. If really necessary, send in another colleague or nurse
Scenario End Criteria:	Patient ventilated, Volume given
Management during Scenario:	Retractions breathing Rhonchi over whole lung
Other:	

Notes:

Sim-Scenario

Name/Nr. Thermal injury - SPECIAL

Scenario Description		
Learning Target	**Description**	**Participants**
Medical: - Management of the burn patient CRM: - Leadership - Decision making - Communication - SA - Ressource management in case of scarcity	Where: - ED - - - Frame conditions: - Day shift - All resources available -	 Students Who: - 1-2 doctors - 1-2 nurses

Notes: Actor can be accompanying person (friend). Also burnt, reveals it later

Scenario is meant to deal with scarcity of ressources – as the second patient reveals himself, another doctor or nurse is not available, the team needs to split

Sim-Scenario

Name/Nr. Thermal injury - SPECIAL

Scenario Briefing		

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
25-year-old male, tried to light a barbecue with petrol, burned his arms, chest, and face. Friend came with him, is available for inquiry. **Both slightly drunk**	none	If actor – be helpful, yet a bit nervous. **When scenario is ongoing (or on signal from instructors) reveal you are in pain, both your palms with burns – try to bind as many ressources as possible without being obnoxious**

Notes:

Sim-Scenario

Name/Nr. Thermal injury - SPECIAL

Script Sim Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
- normal ED cart -make sure io is available - - - adult patient simulator (with burn photo) AND (optional) - SP - - -	- ED stretcher with sim - - - - - - - - - - -	- undressed, burn marks on chest, arms, jaw (or photo) - no iv - - - -

Notes:

Sim-Scenario

Name/Nr. Thermal injury - SPECIAL

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)**
- problem is obvious. If difficulty in taking decisions, help from senior This help could contain: -idea for io -support for analgesia If ressource scarcity is severe and overwhelming, maybe send in some colleagues	Respiratory distress Patient can be agitated Language barrier	- - - -

Notes:

Sim-Scenario

Name/Nr. Thermal injury - SPECIAL

Scenario End Criteria		
Scenario ends when…		
- io access is established - analgesia - transfer to ICU - - identification and treatment of second victim		

Notes: Main debriefing theme, along treatment of burns – ressource scarcity, sudden appearance of another patient.

General note – end the scenario saying:

"The patient is now going to be taken care of, thank you for solving the case"

Sim-Scenario

Name/Nr. Thermal injury - SPECIAL

	Simulator Set-Up, Steering
	(duplicate this page if necessary)

	Phase 1 Start	Phase 2	Phase 3 Analgesia established	
Vitals	HR: 140 /min. BP: 130/ 85 mmHg SpO2: 90%, RR: 28 /min GCS: 15	HR: 150 /min. BP: 180/95, SpO2: if given oxygen raising to 94% RR: 28 /min GCS: 15	HR: 110 /min. BP: 140/80 SpO2: 95% RR: 28 /min GCS: 15	
Text for patient	Pain			
Text for actor	Silent, astonished	Manifesting pain, asking for help	If cared for, calm. If not, continue asking for help	
Other info				
Management during scenario	Pain should be bearable although hardly. Keep stress level manageable			

Notes:

Sim-Scenario

Name/Nr. Thermal injury - SPECIAL

Abstract	

Learning Target:	Management of thermal injury and ressource scarcity
Description:	Burn patient, household accident
Participants:	Students. Roles: 1-2 doctors, 1-2 nurses
Case Briefing:	25-year-old male, tried to light a barbecue with petrol, burned his arms, chest, and face.
List of Material:	Normal ED cart - adult patient simulator AND (optional) - SP
Set-Up Room	ED strectcher with Sim, make sure io is available
Set-Up Simulator:	- undressed, burn marks on chest, arms, jaw - no iv - Actor with burn marks on palms
Scenario Saver:	Senior colleague
Scenario End Criteria:	Analgesia, vascular access, follow-up plan Second patient cared for
Management during Scenario:	Pain should be bearable although hardly. Keep stress level manageable Actor – ask insistently for help if ot cared for
Other:	Keep contact with actor

Notes: Main focus of this version of the scenario is ressource scarcity

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Sim-Scenario #12 - Epilepsy

Scenario Description

Learning Target

Medical:
- Diagnosis and initial management of a patient with a first time generalized tonic-clonic seizure which evolves to status epilepticus

CRM:
Call for help
- Anticipate and plan
- Use the 3Cs to communicate (citing names, clear instructions, close the loop)
- Situation awareness (be aware of the initial situation and re-assess)
- Share the mental model and gather team feedback
- Organise team
- Distribution of roles and tasks
- Adequate handover

Notes:
This scenario can be performed by a nurse participant. A second nurse student can be added, either from the beginning of the case or as help to the first student
Either the simulator can fit or alternatively one person (participant?) acts as fitting patient.

Description

Where:
- Emergency department

Who:
- Patient with first generalized clonic seizure

Frame conditions:
- none specific

Participants

- Nurse students 4th year

- Emergency physician as briefer and backup rescue

- Nurse assistant as confederate

- Actor as fitting patient if SP

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SIMULATION APPROACH FOR
EDUCATION AND TRAINING
IN EMERGENCY

Sim-Scenario #12 - Epilepsy

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual positions)	Case Briefing (Roleplayers)
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.	You are the first health care professional in contact with the patient. Examine him, try to find a diagnosis, and initiate management. You will get help, when you call for it.	**Nurse assistant:** You are a nurse assistant in the emergency department. You will be in the room when the participant(s) arrive. Your role as confederate will be to help the participant and to guide her with material location and available resources. 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 designed for 1 or 2 students (nurses)

Sim-Scenario #12 - Epilepsy

Script Sim Nurse/Co-Instructor

List of Material

- standard ER-room with monitoring, equipment, stretcher
- 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

Set-Up Room

- standard ER-room with monitoring, equipment, stretcher

- the simulator/patient is lying on a stretcher

- outside the room
(ready only on request):
- defibrillator
- 12-lead ecg
- lab-results
- patients medication plan

Set-Up Simulator

- when the scenario starts, the patient (computerized mannequin/simulator/actor) is not monitored, has neither an i.v. line nor oxygen

- patient with daily clothes on a stretcher
(no additional item needed)

- If available: clothes and/or a wig to emphasize the age of the patient (65 yo male)

- Simulator setting:
see simulator steering step 1

Notes: The limitation of the scenario:
- Intravenous cannulation – depending on setup can be done
- Simulation of a generalized tonic-clonic seizure. The nurse assistant (confederate) could shake the mannequin to simulate the seizures
- Neurologic examination (pupils, sensitive and motor response)

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Sim-Scenario #12 - Epilepsy

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 the participants are not able to reach a diagnosis or if they reach a diagnosis but don´t initiate patient management 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…"	Participants are expected to reach a diagnosis and initiate patient management. Also they should anticipate the medical treatment (drugs, airway management..etc). Finally, a team member in the role of the consultant emergency medicine enters the room and requests a handover. If the team really is too fast, the confederate will ask about next steps in patient management. But a good performance should not be slowed down unnecessarily!	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 emergency nurse will enter the scenario to reconduct the situation. A radio connection between the team and the confederate should exist to direct the learners via the confederate in the favoured direction.

Notes: Possibility of telephone orders by the

Sim-Scenario #12 - Epilepsy

physician when they suggest the treatment?

Scenario End Criteria

Scenario ends when…	Timing	Expected (key) actions
all of the following statements are true: ● The diagnosis of status epilepticus is made ● Support treatment is done (oxygenation, intravenous cannulation…) ● Treatment was suggested and prepared (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	The scenario is planned to last (15-)20 minutes. At the end of the scenario the emergency physician will enter the room and requests a hand-over, following the SBAR-scheme (including ABCDE and SAMPLERS) Instructors could help if the previous points have not been achieved within the stipulated time.	● time / team performance ● anticonvulsive drugs proposed ● airway opening/oxygenation/ventilation, (general anaesthesia and intubation suggested) ● handover

Sim-Scenario #12 - Epilepsy

consultant emergency medicine enters the room and requests a handover		

Notes: Don't let the patient die!

General note – end the scenario saying:

"The patient is now going to be taken care of, thank you for solving the case"

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Sim-Scenario #12 - Epilepsy

Simulator Set-Up, Steering, 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

Sim-Scenario #12 - Epilepsy

Simulator Set-Up, Steering, 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)

Notes:
This scenario can be adapted to a medical student and nurse or only one of them.
Not learning target are:
placements of iv-lines, taking blood samples, intubation

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Sim-Scenario #12 - Epilepsy

Abstract	
Learning Target:	-Diagnosis and management 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:	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:	-Standard ER-Setting - clothes (wig?) for a 70 yo male -Medication: anaesthesia induction, anticonvulsant and antihypertensive - ventilator
Set-Up Room	-Emergency room -Manikin on stretcher
Set-Up Simulator:	-Manikin with vital signs remote control, possibility of cardiac and respiratory auscultation and orotracheal intubation - if possible: ability to fit
Scenario Saver:	Nurse assistant, emergency nurse (team members)
Scenario End Criteria:	- management of status epilepticus seizure with success - propper oxygenation/ventilation and resaturation of the patient - adequate hand over
Management during Scenario:	The nurse assistant (confederate) will shake the mannequin to simulate the seizures, if no other solution. Communication with confederate (radio/walkie talkie)
Other:	Limitations - Intravenous cannulation

Notes:

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Sim-Scenario #12 - Epilepsy

Scenario Description

Learning Target

Medical:
- Diagnosis, management and treatment of a patient with a first time generalized tonic-clonic seizure which evolves to status epilepticus

CRM:
Call for help
- Anticipate and plan
- Use the 3Cs to communicate (citing names, clear instructions, close the loop)
- Situation awareness (be aware of the initial situation and re-assess)
- Share the mental model and gather team feedback
- Organise team
- Distribution of roles and tasks
- Adequate handover

Notes:
This scenario can be performed by a medical participant. A second medical student can be added, either from the beginning of the case or as help to the first student Either the simulator can fit or alternatively one person (participant?) acts as fitting patient.

Description

Where:
- Emergency department

Who:
- Patient with first generalized clonic seizure

Frame conditions:
- none specific

Participants

- Medical students 5th or 6th year or Residents 1st year

- Emergency physician as briefer and backup rescue

- Nurse assistant as confederate

- Actor as fitting patient if SP

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IN EMERGENCY

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Sim-Scenario #12 - Epilepsy

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)

You are the first health care professional in contact with the patient.
Examine him, try to find a diagnosis, and make a therapy decision.
You will get help, when you call for it.

Case Briefing (Roleplayers)

Nurse assistant:
You are a nurse assistant in the emergency department. You will be in the room when the participant(s) arrive. Your role as confederate will be to help the participant and to guide her 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 designed for 1 or 2 students (nurses)

Sim-Scenario #12 - Epilepsy

Script Sim Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
- standard ER-room with monitoring, equipment, stretcher - 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	- standard ER-room with monitoring, equipment, stretcher - the simulator/patient is lying on a stretcher - outside the room (ready only on request): - defibrillator - 12-lead ecg - lab-results - patients medication plan	- when the scenario starts, the patient (computerized mannequin/simulator/actor) is not monitored, has neither an i.v. line nor oxygen - patient with daily clothes on a stretcher (no additional item needed) - If available: clothes and/or a wig to emphasize the age of the patient (65 yo male) - Simulator setting: see simulator steering step 1

Notes: The limitation of the scenario:
- Intravenous cannulation – depending on setup can be done
- Simulation of a generalized tonic-clonic seizure. The nurse assistant (confederate) could shake the mannequin to simulate the seizures
- Neurologic examination (pupils, sensitive and motor response)

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Sim-Scenario #12 - Epilepsy

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 the participants are not able to reach a diagnosis or if they reach a diagnosis but 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…"	The response of the patient/simulator to the therapy may vary. If the team really is too fast, more drugs / alternative drugs are needed to succeed. But a good performance should not be slowed down unnecessarily!	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 and the confederate should exist to direct the learners via the confederate in the favoured direction.

Notes:

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Sim-Scenario #12 - Epilepsy

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 suggested (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	The scenario is planned to last (15-)20 minutes. At the end of the scenario the emergency physician will enter the room and requests a hand-over, following the SBAR-scheme (including ABCDE and SAMPLERS) Instructors could help if the previous points have not been achieved within the stipulated time.	● time / team performance ● anticonvulsive drugs proposed ● airway opening/oxygenation/ventilation, (general anaesthesia / intubation suggested) ● handover

Notes: Don't let the patient die!
General note – end the scenario saying:
"The patient is now going to be taken care of, thank you for solving the case"

Sim-Scenario #12 - Epilepsy

Simulator Set-Up, Steering, 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

Sim-Scenario #12 - Epilepsy

Simulator Set-Up, Steering, 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)

Notes:
This scenario can be adapted to a medical student and nurse or only one of them.
Not learning target are:
placements of iv-lines, taking blood samples, intubation

Sim-Scenario #12 - Epilepsy

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:	-Standard ER-Setting - clothes (wig?) for a 70 yo male -Medication: anaesthesia induction, anticonvulsant and antihypertensive - ventilator
Set-Up Room	-Emergency room -Manikin on stretcher
Set-Up Simulator:	-Manikin with vital signs remote control, possibility of cardiac and respiratory auscultation and orotracheal intubation - if possible: ability to fit
Scenario Saver:	Nurse assistant as familiar and emergency Physician (team member)
Scenario End Criteria:	- management of status epilepticus seizure with success - propper oxygenation/ventilation and resaturation of the patient
Management during Scenario:	From control room and with familiars. The nurse assistant (confederate) will shake the mannequin to simulate the seizures, if no other solution. Communication with familiar (radio/walkie talkie)
Other:	Limitations - Intravenous cannulation

Notes:	