SAFETY

simulation for medical practice

SIMULATION APPROACH FOR EDUCATION AND TRAINING IN EMERGENCY

R5.2 Training material for the second exceptional module

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DOCUMENT VERSION 01

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Sim-Scenario

Hypertensive emergency
Hypertensive Encephalopathy
(Panicked relative)

Scenario Description

Learning Target	Description	Participants
Medical: -diagnose hypertensive encephalopathy based on the history, physical examination findings, lab studies and CT scan - consider other diagnostic tools such as fundoscopic exam, optic ultrasonography - acknowledge hypertensive encephalopathy as a medical emergency - optimize hemodynamics by using antihypertensives and fluid resuscitation if needed -search the cause of the hypertension **CRM:** - understand the importance of communication - effective teamwork to deliver a quick diagnosis and decide the next best move in patient management	Where: - high-dependency unit (HDU) Frame conditions: Day shift, al ressources available	- 3-4 participants, 1-2 doctors, 1-2 nurses, 1 panicked relative Wife as actor possible (she could report restlessness and confusion)

Notes:

Sim-Scenario

Hypertensive Encephalopathy

Scenario Briefing

Briefing (everyone)	**Additional Briefing (individual Positions)**	**Case Briefing (Roleplayers)**
Silvio D is a 55-year-old male adult farmer who for the past 3 days had during the evenings headache and nausea. In the morning of his admission he has restlessness and confusion. Confused, restless, vomiting and dehydrated, he gets admitted to HDU. Initial clinical examination: sweaty, warm skin, BP 190/120 mmHg, AV 120/min equal pulses at upper and lower limbs A wait-and-see approach is endorsed encompassing lowering the BP and fluid resuscitation.	Patient voice: Initially slurry, but recalls history of headache and nausea	Nurse – informs on vomiting, confusion and agitation; Helps the doctor to evaluate the neurological state of the patient. Neurologist – in order to help confirming the severe neurological state **Background info for Trainers:** persistent or worsening hypertension may lead to neurological deterioration. During this time the panicked relative it is very agitated and the resident doctor tries to calm it down. Clinical, laboratory, CT scan and monitoring data are prepared to help diagnose the hypertensive emergency with organ dysfunction.

Notes:

Sim-Scenario

Hypertensive Encephalopathy

Script Sim Nurse/Co-Instructor

List of Material	**Set-Up Room**	**Set-Up Simulator**
- standard monitoring - i.v antihypertensives - arterial lines - intubation kit - fluids - pumps	- high-dependency unit	- SimMan 3G or TraumaHal Gaumard, dressed casually (farmer)

Notes:

Sim-Scenario

Hypertensive Encephalopathy

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 coa**
Neurologist (roleplayer) comes to assess the patient. Does a full body exam and asks to see the CT scan and the lab results.	Neurologist (roleplayer) should then discuss the arguments supporting hypertensive emergency/ hypertensive encephalopathy diagnosis. However, do not unnecessarily delay a good team.	

Notes:

Sim-Scenario

Hypertensive Encephalopathy

Scenario End Criteria

Scenario ends when…	**Expected actions during initial assessment and treatment:**	**Case story**
- Hypertensive encephalopathy is recognized - hemodynamics are optimized - patient is intubated	- physical examination - full neurologic exam - check vital signs - check blood-gas - check CT scan - check biochemistry - **may** ask for fundoscopic exam **- may** ask for optic ultrasonography - iv antihypertensives in order to lower MAP 10-20% in the first hour and no more than 25% total in the ED - iv fluids - call neurological evaluation -if altered mental state, consider endotracheal intubation	-responded well to initial management: intravenous antihypertensive Nicardipine (start infusion at 5 mg/h, increase by 2.5 mg/h q5min (max 15 mg/h), drop to 3 mg/h when desired BP obtained Initial CT scan excludes any intracranial event. Lab studies show initial mild metabolic acidosis, microscopic hematuria. After initial improvement, he worsens his neurological state, he becomes arresponsive to speech or pain.

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

Hypertensive Encephalopathy

Simulator Set-Up, Steering

	Phase 1 Initial and management phase	Phase 2 Worsening if no adequate measures
Vitals	HR: 120/min, sinus rhythm BP: 190/120 mmHg SpO2: 98% with 4l/O2 CO2: 24 mmHg Resp. Rate: 35/min Temp: 36.3 C	HR: 120/min, sinus rhythm BP: 210/140 mmHg SpO2: 90% with 6l/O2 CO2: 55 mmHg Resp. Rate: 10/min Temp: 36.3 C
Text for patient	-Patient has an initial slurry speech -Agitated (RASS +1, +2) - S.D. reports nausea and vomiting - with persisting hypertension he becomes arresponsive to speech and pain	Same as before
Other info	**Critical actions:** - iv antihypertensives in order to lower MAP 10-20% in the first hour and no more than 25% total in the ED - iv fluids - call neurological evaluation	**Critical actions:** -avoid centrally acting antihypertensives (clonidine, methyldopa or reserpine) to prevent CNS depression and clouding of mental state
Management during scenario		

Notes: First evaluation.
Biochemistry outstanding: microscopic hematuria; all other values are within normal range.
BGA: lactate of 2.5 mmol/L; CO2 of 24 mmHg; HCO3 of 17mEq/L; pH of 7.28.
CT scan shows no signs of stroke, hemorrhage or intracranial mass.

Sim-Scenario

Hypertensive Encephalopathy

Abstract

Learning Target:	Management of hypertensive crisis
Description:	55 yr old patient with a history of headache and nausea, going in hypertensive encephalopythy
Participants:	3-4 participants, 1-2 doctors and 1-2 nurses
Case Briefing:	Silvio D is a 55-year-old male adult farmer who for the past 3 days had during the evenings headache and nausea. In the morning of his admission he has restlessness and confusion.
List of Material:	
Set-Up Room	High Dependency Unit
Set-Up Simulator:	dressed casually (farmer)
Scenario Saver:	Neurologist
Scenario End Criteria:	Recognition and treatment of hypertensive crisis
Management during Scenario:	
Other:	

Notes:

Sim-Scenario

Name/Nr. ALS, CPR (Panicked relative)

Scenario Description

Learning Target

Medical:

- Recognize the critically ill patient a provide ALS care including high qual
- Provide ACLS to a patient with cardiac arrest including recognizing shockable and non-shockable rhythr
- Provide post-cardiac arrest care in patient with ROSC

CRM:

- Communicate effectively within ar interdisciplinary team during a resuscitation
- Prioritize tasks such as medications, interventions and consultations in a critically ill patient
- Delegate tasks amongst team Members

-Provide appropriate support to the patient's relatives

Description

Where:
- Indoor
- Apartment/house

Who:
- 1 Patient
- 1 Relative/spouse
- 2-4 Paramedic
- 1 Doctor (respons unit)

Frame conditions:
- Morning shift
- Other resources can be available If needed.

Participants

- 2-4 Paramedic students 3rd year
- 1 Medical student 4/5/6 th year
- 1-2 Nursing students 3rd year

Notes:

Sim-Scenario

Name/Nr.CPR

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
A 55-year-old man with chest pain starting for an hour ago. He describes midsternal pain that radiate to left arm. He is healthy with no past medical history. The last 20 minutes the pain has increased, and his wife has called for an ambulance.	Out-call: A 55-year-old man complaining about chest pain. When arriving the scene, he is initial mildly hypotensive and tachycardic. His skin is pale, and pulse is weak. He describes the pain as 9 (NRS). The ECG show an anterior STEMI. The patient will go into VT with a pulse, and then he will become unconscious with a VF arrest. After 15 minutes the patient will have ROSC and the team will need to provide post-ROSC care.	Standardized patient: Your name is Oscar Nielsen, you are 55-year-old, living with your wife. You are a healthy man with no past medical history. You suddenly got chest pai that started for an hour ago when you were outside working in your garden. The pain is midsternal chest pain and is radiating to your left arm. You are feeling scared and anxious. Doctor: You are on duty and arrive on the scene if the participants calls for help. Relative/Spouse: During CPR you are freaking out and start interrupting the paramedics both verbally and physically

Notes:

Sim-Scenario

Name/Nr. CPR

Script Sim Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
- Portable vital signs with defibrillator (LLEAP) including ECG - IV access equipment/Intraosseous set-up - Equipment for air management (including ET-tubes or LMA) - Stethoscope - Laryngoscope - <u>Medications:</u> - Adrenaline - Amiodarone - Lidocaine (100mg) may be used as an alternative if amiodarone is not available - Saline	An apartment/living room - Radio or phone available	- Standardized patient - Manikin for QCPR

Notes:

Sim-Scenario

Name/Nr. CPR

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 problem is not identified (from the ECG), the senior consultant from cardio-department will call the paramedics after he has looked at the ECG (he is only available on the phone). -If the students don't take an ECG, the dispatch center will call and ask if they have sent the ECG.	The patient will have a cardiac arrest for at least 10-15 minutes before he will get ROSC. If they`re planning for transport, the patient will have a cardiac arrest before they`re finished with preparing transport.	

Notes:

Sim-Scenario

Name/Nr. CPR

Scenario End Criteria

Scenario ends when..		
- The patient gets ROSC and is ready for transfer to hospital		

Notes: Don’t let the patient die!

Sim-Scenario

Name/Nr. CPR

Simulator Set-Up, Steering

(duplicate this page if necessary)

Vital Signs	Text for Patient/ patient relative	Management during scenario
<u>Initial:</u> HR: 100/min BP: 100/60 SpO2: 90% CO2: Resp. Rate: 20/min Temp: 37 °C ECG: Anterior STEMI	After the patient assessment, the chest pain is getting worse, and you will have problem with speaking in whole sentence. You are groaning and complaining. The skin will be more pail and clammy. The patient will have Cardiac arrest 5 minutes after arrival. The standardized patient will change to manikin for CPR. This will be led by the facilitator. Patient relative: You are in distress, and it escalates when your spouse get cardiac arrest. You panic and starts to shout and cry loud and interrupt the paramedics.	<u>After 5 minutes:</u> HR: 190/220/min BP: no BP SpO2: - Resp. Rate: - ECG: VT and then VF After 15 minutes with CPR the Patient gets ROSC. <u>ROSC:</u> HR: 60/min BP: 105/60 SpO2: 89% Resp. Rate: 9/min Temp: 36 °C ECG: Sinus

Notes:

Sim-Scenario

Name/Nr. CPR

Abstract	
Learning Target:	QCPR, communication skills
Description:	CPR (ALS), this scenario include an additional learning goal to take care of the patient's panicked relative
Participants:	Paramedic students, nursing student, medical students
Case Briefing:	
List of Material:	
Set-Up Room	Apartment/living room
Set-Up Simulator:	SP, SP's relative, CPR manikin
Scenario Saver:	
Scenario End Criteria:	ROSC
Management during Scenario:	
Other:	

Notes:

Sim-Scenario

Name/Nr. Neonatal sepsis and panicked mother

Scenario Description

Learning Target	**Description**	**Participants**
<u>Medical:</u> - Identify neonatal sepsis - Stabilize the newborn - Reassure the mother <u>CRM:</u> - Equipment check - Closed-loop communication - (I)SBAR	<u>Where:</u> - Neonatology department/nursery <u>Frame conditions:</u> Daytime, all resources available	Students Who: - 1 doctor - 2 nurses - Mother

Notes: correct communication with the mother during scenario

Sim-Scenario

Name/Nr. Neonatal sepsis and panicked mother

Scenario Briefing				
3 days old newborn. First born at term. Normal pregnancy. Maternal swabs positive for group B streptococcus. The mother brings the baby to the examination room because it is less reactive and shows feeding problems. The mother stays at the nursery while the staff takes care of the baby				

Sim-Scenario

Name/Nr. Neonatal sepsis and panicked mother

Script Sim Nurse/Co-Instructor

List of Material	**Set-Up Room**	**Set-Up Simulator**
- Vital Sign Monitor (ECG, SpO_2) - T piece system - Thermometer - Nasotracheal or orotracheal intubation material - Material for peripheral venous access - EAB and blood and coagulation test tubes - Saline	- Infant warmer - Phone available	- Actor dressed - Neonatal simulator Description of history and status in briefing.

Notes:

Sim-Scenario

Name/Nr. Neonatal sepsis and panicked mother

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)**
Newborn remains dyspneic.	Scenario continues until blood tests are requested and antibiotics are started	During scenario the mother repeatedly asks how the infant is doing and goes on to tell why she brought him to the nursery

Notes:

Sim-Scenario

Name/Nr. Neonatal sepsis and panicked mother

Scenario End Criteria		
Scenario ends when…		
- blood tests are requested and antibiotics are started		

Notes:

Sim-Scenario

Name/Nr. Neonatal sepsis and panicked mother

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

	Phase 1 Arrival in Nursery	Phase 2 Doctor arrives	Phase 3 Stabilization
Vitals	HR: 180 bpm, SpO_2 80%, Dyspnoea	HR: 180 /min. SpO_2: 88%	HR: 140 /min. SpO_2: 90%
Text for patient			
Other info	GBS positive		
Management during scenario	monitoring vital parameters, starting CPAP with T-piece. Call for the doctor	Giving the correct information to the doctor. Explaining to the mother that she visits the newborn. Make it clear that the mother can stay while manoeuvres are performed on the newborn baby.	Perform blood tests, place peripheral venous access, perform saline bolus and start antibiotic therapy.

Notes: Throughout the scenario manage the mother who always appears very worried

Sim-Scenario

Name/Nr. Neonatal sepsis and panicked mother

Abstract

Learning Target:	management of neonatal sepsis panicked mother
Description:	Neonatal sepsis and panicked mother
Participants:	Students: 1 doctor, 2 nurses, Mother
Case Briefing:	
List of Material:	Monitor, T-piece system, material for drugs and heating equipment
Set-Up Room	Nursery
Set-Up Simulator:	Neonatal simulator
Scenario Saver:	
Scenario End Criteria:	Newborn stabilized and antibiotic therapy started
Management during Scenario:	
Other:	

Notes: