

SAFETY

simulation for medical practice

SIMULATION APPROACH FOR
EDUCATION AND TRAINING
IN EMERGENCY

Musculoskeletal Injury, Acute Compartment Syndrome The Emergency Institute for Cardiovascular Diseases (EICD)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	5
<i>Scenario Saver</i>	6
<i>Scenario End Criteria</i>	7
<i>Simulator Set-Up, Steering</i>	8
<i>Abstract</i>	9

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• diagnose ACS of extremities based on the history, physical examination findings and lab results• consider other diagnostic tools such as an intra-compartmental pressure monitoring device and/or near-infrared spectroscopy (NIRS)• acknowledge ACS as a surgical emergency and call for immediate surgical evaluation• when needed, optimize hemodynamics to ensure adequate limb perfusion before proceeding to a definitive surgical management (fasciotomy) <p>CRM:</p> <ul style="list-style-type: none">• understand the importance of interdisciplinary communication• effective teamwork to deliver a quick diagnosis and decide the next best move in patient management	<p>Where: high-dependency unit (HDU)</p> <p>Frame conditions: Day shift, all resources available</p>	<p>3-4 participants, all students:</p> <ul style="list-style-type: none">• 1-2 doctors• 2 nurses• The surgeon on call as backup (confederate)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>John is a 30-year-old male adult who suffered a crush injury of his left lower limb (calf) while climbing and being trapped against a boulder for 4 hours until rescued</p> <p>Confused, dehydrated, and in pain, he gets admitted to HDU.</p> <p>A wait-and-see approach is endorsed encompassing fluid resuscitation, pain relief with iv drugs and regional techniques.</p> <p>X-ray showed no fracture</p> <p>Lab studies show initial moderate rhabdomyolysis.</p> <p>After initial improvement, the patient becomes restless.</p>	<p>Patient:</p> <ul style="list-style-type: none">• Patient reports lower limb burning pain sensation• Agitated• if extremity is stretched, pain is worse• reduced sensibility in lower left limb	<p>Nurse – informs on pain, confusion and agitation; should be ready to provide labs, X ray and details about pain management – NSAIDS, paracetamol, regional analgesia.</p> <p>Surgeon – only if medical problem is unidentified or identified too quickly (see below).</p> <p>Trainers background info: A left lower limb compartment syndrome causes further deterioration. Surgery is the ultimate life-saving intervention that must be endorsed without further delay. Meanwhile, hemodynamic optimization is warranted to avoid regional ischaemia.</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- fluids
- pumps
- standard monitoring
- NIRS monitoring
- Intracompartmental pressure monitoring device with digital display and possibility to control it remotely

Set-Up Room

high-dependency unit

Set-Up Simulator

- SimMan 3G or TraumaHal Gaumard

Notes:

Scenario Saver

How to react if the medical problem is not identified

Surgeon (roleplayer) comes to reassess patient. Asks patient about paresthesias, pain dynamics, and eventually raises the question of whether to do surgery or not for limb decompression.

How to react if the medical problem is identified too quickly

Surgeon (roleplayer) should then discuss the arguments supporting Acute Compartment Syndrome diagnosis.
However, do not unnecessarily delay a good team.

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...	Expected actions during initial assessment and treatment:	Case story
<ul style="list-style-type: none"> • Acute Compartment Syndrome is recognized • hemodynamics are optimized • surgical evaluation is asked for 	<ul style="list-style-type: none"> • physical examination • check pain dynamics • check pain with stretching • check sensation • check blood-gas • check biochemistry • check X-ray • may compare NIRS values for both lower limbs • may ask for intracompartmental pressure monitoring device with digital display • check and compare dorsalis pedis pulses • iv fluids • norepinephrine to aim for MAP 65 mmHg • may ask for POCUS • call surgical evaluation 	<p>initial clinical examination: equally warm lower limbs, good peripheral pulses, similar pulse oximetry plethysmographic waveform amplitude between the lower limbs</p> <ul style="list-style-type: none"> • dressing for puncture wound with minimal contamination; received antibiotics • responded well to initial management: intravenous fluids, ice-packs, pain relief with NSAIDS, paracetamol, and US-guided saphenous (adductor) and sciatic-popliteal nerve block with 0.2% ropivacaine and dexamethasone 4mg/20ml • pain rebounds under nerve blockade, is extreme and described as deep and burning, and increases with passive stretch • unequal plethysmographic amplitudes • patient describes paresthesia • lab studies show worsened rhabdomyolysis

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”

Simulator Set-Up, Steering

	Phase 1 Initial and management phase	Phase 2
Vitals	HR: 128/min, Sinus thyrhm	HR: 114/min, Sinus rhythm

	BP: 75/40 mmHg SpO2: 98% with 4l/O2 (CO2: 28 mmHg) Resp. Rate: 28/min Temp: 37.8	BP: 93/52 SpO2: 98% with 4l/O2 (CO2: 30 mmHg) Resp. Rate: 26/min Temp: 37.8
Text for patient	<ul style="list-style-type: none"> • Patient reports lower limb pain. • Agitated (RASS +1, +2) • if asked about type of pain, J.F. reports burning pain • if LLL is stretched, J.F. reports worsened pain • if sensibility is checked for, J.F. reports diminished LLL sensibility 	Same as before
Other info	Critical actions: Recognising the emergency Call for surgical evaluation	
Management during scenario		

Notes: Initial evaluation.

Biochemistry outstanding: CK 4000 U/L; all other values are within normal range.

NIRS values: LLL 35% and RLL 56%.

X-ray shows no fracture.

BGA: lactate of 3.5 mmol/L; CO2 of 28 mmHg; HCO3 of 19mEq/L; pH of 7.45.

Compartment pressure: 32 mmHg. If POCUS asked for, then show hyperdynamic empty chambers and collapsible inferior vena cava. LLL dorsalis pedis pulse << RLL dorsalis pedis pulse.

Abstract

Learning Target:	Recognition and management of Acute Compartment Syndrome
Description:	Traumatic Compartment Syndrome, worsening in ED
Participants:	1-2 doctors, 2 nurses (all students).

Case Briefing:	Young man, mountaineering accident, crush injury of lower left limb, pain rebounding despite management
List of Material:	intracompartmental pressure monitoring device with digital display
Set-Up Room	High dependency unit
Set-Up Simulator:	Simulator with appropriate moulage
Scenario Saver:	Surgeon
Scenario End Criteria:	Surgical evaluation after recognition of Acute Compartment Syndrome
Management during Scenario:	
Other:	

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SIMULATION APPROACH FOR
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Anaphylactic Shock

The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	14
<i>Scenario Briefing</i>	15
<i>Script SIM Nurse/Co-Instructor</i>	16
<i>Scenario Saver</i>	16
<i>Scenario End Criteria</i>	17
<i>Simulator Set-Up, Steering</i>	18
<i>Abstract</i>	20

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• diagnose and manage Severe anaphylaxis/ Anaphylactic shock• consider other Differential diagnosis for post-operative shock <p>CRM:</p> <ul style="list-style-type: none">• Leadership• Decision making• communication	<p>Where:</p> <p>post-operative setting, High dependency unit</p> <p>Frame conditions:</p> <ul style="list-style-type: none">• early day shift• university hospital• all resources available	<p>students and/or trainee physicians and/or trainee nurses</p> <p>Roles:</p> <ul style="list-style-type: none">• 2 doctors, senior and junior or both junior• 1 or 2 nurses
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Mr. Anton J. is a 54-year-old man, who is in day 3 after a liver tumour resection.</p> <p>Smoker, no other CV Risk factors, no other Known illnesses.</p> <p>Intra-op and day 1 there was bleeding, which required PRBC transfusion, good evolution in the last 24 hours.</p> <p>Drains are still in place and have produced 150 ml in the last 12 hs.</p> <p>He has been indicated a fresh frozen plasma transfusion by the night shift team just before handover, which is inplace, dripping.</p>		<p>If nurse is actor and not trainee – Available for permanent assistance should be aware of surroundings and trained in assisting airway management</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Crash cart
- Fluids
- iv cannulas
- arterial line if required
- O2 source and nebulizer
- airway management cart
- external defibrillator
- medication (labelled)
epinephrine, norepinephrine,
vasopressin, glucagon,
methylene blue) –
depending on local availability.
hydrocortisone, dexamethasone,
methylprednisolone,
depending on local availability.
- H1 blockers – diphenhydramine
- H2 blockers – cimetidine or
ranitidine.

Set-Up Room

- hospital bed with
- high fidelity simulator
- vital functions monitor

Set-Up Simulator

- human patient sim
- hospital gown
- only ECG in place, NIBP and SpO2
available
- abdominal drains in place
- 1 unit of FFP (marked
as such) dripping

Notes:

Scenario Saver

How to react if the medical problem is not identified

the nurse (actor) can say everything happened when FFP infusion was started

- if unclear how to manage – send senior in

How to react if the medical problem is identified too quickly

- patient can have refractory anaphylaxis or poor response to initial therapy
- case can be led towards cardiac arrest (V fib, responds to first shock)

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...

- airway is controlled
- epinephrine has been given
- patient is stable
- adjunctive therapy has been 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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2
Vitals	HR: 105/min, sinus rhythm BP: 96/55 mmHg SpO2: 97% CO2: unavailable Resp. Rate: 22/min	HR: 135/min, sinus rhythm BP: 78/45 mmHg SpO2: 87% CO2: unavailable Resp. Rate: 30/min

	Temp: 37.4 Dysphonia, at pulmonary auscultation - sibilant rhonchi	Temp: 37.4 Dysphonia, stridor, sibilant rhonchi
Text for patient	I feel dizzy doctor, I'm having trouble breathing, there's a weight on my chest, I feel itchy all over	- I'm having trouble breathing, there's a weight on my chest (low voice, breathless, 2-3 words per sentence)
Other info		Critical actions: ABCDE approach epinephrine 5-20 mcg iv bolus or 0.3-.5 mg IM fluid bolus 20 ml/kg
Management during scenario		- check iv access - place patient on oxygen - full patient monitoring - ask for arterial blood gas blood count and dynamics - should consider early airway management

Notes: Lab values should not induce alternate diagnosis, Hb should be stable, at discretion of facilitator, no other organ dysfunction.
If POCUS asked for, hyperdynamic chambers, collapsible IVC.
If requested, ABG – lactate 2.2 mmol/l, CO2 31 mmHg, pH 7.35

	Phase 3 If epinephrine given	Phase 4 If epinephrine and adjunctive therapy given	Phase 5 If epinephrine not given
Vitals	HR: 127/min, sinus rhythm BP: 82/55 mmHg SpO2: 92% if patient on oxygen, if in room air, 88% CO2: unavailable Resp. Rate: 26/min Temp: 37.4	HR: 107/min, sinus rhythm BP: 105/68 mmHg SpO2: 98% if patient on oxygen, if in room air, 93% CO2: unavailable Resp. Rate: 22/min Temp: 37.4	HR: 160/min, sinus rhythm BP: 50/30 mmHg SpO2: 80% CO2: unavailable Resp. Rate: 40/min, shallow breathing Temp: 37.4

Text for patient	I feel a little better, but still dizzy	Feeling better	moans, incomprehensible sounds
Other info	if stage reached too early, facilitator can keep patient in state 2 and expect alternatives to conventional therapy (vasopressin 0.001-0.004 units/min or glucagon 1 mg iv over 5 min for beta blocker reversal or methylene blue 1.5-2 mg/kg iv bolus)		
Management during scenario	<ul style="list-style-type: none"> - should consider arterial line - should consider second epinephrine dose or iv continuous drip - should consider adjunctive therapy (corticoids, anti H1/H2) 		<ul style="list-style-type: none"> - should give epinephrine - should perform airway management - difficult physiologic and/or anatomic airway - should consider glottic edema and prepare with cricothyrotomy kit

Abstract

Learning Target:	Recognition and management of Anaphylaxis / Anaphylactic shock
Description:	Patient, day 3 post-op, develops an anaphylactic shock to FFP transfusion
Participants:	<p>2 doctors, senior and junior or both junior</p> <p>1 or 2 nurses</p> <p>Suitable also for residents</p>
Case Briefing:	<p>54-year-old man, who is in day 3 after a liver tumour resection. Intra-op and day 1 there was bleeding, which required PRBC transfusion, good evolution in the last 24 hours.</p>

	Drains are still in place and have produced 150 ml in the last 12 hs.
List of Material:	
Set-Up Room	High dependency unit
Set-Up Simulator:	Hospital bed, gown, FFP perfusion
Scenario Saver:	Senior physician
Scenario End Criteria:	<ul style="list-style-type: none">- airway is controlled- epinephrine has been given- adjunctive therapy has been given
Management during Scenario:	
Other:	

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SIMULATION APPROACH FOR
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Atrial Fibrillation With Instability The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	25
<i>Scenario Briefing</i>	26
<i>Script SIM Nurse/Co-Instructor</i>	26
<i>Scenario Saver</i>	27
<i>Scenario End Criteria</i>	28
<i>Simulator Set-Up, Steering</i>	29
<i>Abstract</i>	31

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Management of Adult Tachycardia(with pulse) based on ABCDE approach;• consider other diagnostic tools such as an ultrasound (in order to exclude other causes of circulatory shock)• acknowledge AF with cardiovascular instability as a emergency and apply synchronized DC shock +/- amiodarone• Optimize hemodynamics to ensure adequate tissue perfusion• Asses thromboembolic risk and if necessary consider anticoagulation <p>CRM:</p> <ul style="list-style-type: none">• understand the importance of interdisciplinary communication;• effective teamwork to deliver a quick diagnosis as well as management of an emergency	<p>Where: Emergency department</p> <p>Frame conditions: Day shift in the ED</p> <ul style="list-style-type: none">• Chest X-ray• EKG• Complete blood examination• blood gas analysis• troponin I• cardiac ultrasound are being done	<p>3-4 participants, students:</p> <ul style="list-style-type: none">• 1-2 doctors• 1-2 nurses <ul style="list-style-type: none">• The cardiologist and intensive care medical doctor on call as backup (confederates)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Olga is a 24-year-old female adult who has been partying all night; She barely touched alcohol (she has to work the next day); She has no medical history.</p> <ul style="list-style-type: none"> • E.D. admission with palpitations, dizziness, shortness of breath and a vague sensation of chest discomfort; <p>At the initial examination signs of circulatory shock are seen.</p> <p>initial clinical examination:</p> <ul style="list-style-type: none"> • tachycardia(149 bpm) • polypnea (RR=20/min), SpO2=94% room air, • poor peripheral pulses, • CRT 5 sec, • pale and cold skin • SBP of 82 mmHg <p>Fluids and oxygen are the initial management strategies. She is put on iv fluids (500 ml crystalloid and 500 ml G5%) and 3 l of non-invasive oxygen. No improvement is seen, the doctor is called. She is currently with standard non-invasive monitorization and with 1 peripheral IV access (G18).</p>	<p>SP/manikin voice:</p> <ul style="list-style-type: none"> • patient (Olga) is a 24-year-old female adult who has been partying all night (her best friend's bachelor party); • she barely touched alcohol (she has to work the next day); • she went home at 2 :00 am <p>(she remembers she was tired and a little dizzy)</p> <ul style="list-style-type: none"> • Always healthy, apart for short episodes of palpitations (heart like running) after strenuous work (never investigated) • she woke up at 7:00 am complaining of palpitations and dizziness; • Scared she went to the emergency department 	<p>Nurse - informs on symptoms; should be ready to provide labs, X-ray.</p> <p>Cardiologist - only if medical problem is unidentified or identified too quickly (see below).</p> <p>Background for Trainers: tachycardia (AF in this situation) can cause cardiovascular instability (e.g. hypotension, tissue hypoperfusion , shock, myocardial ischemia...)</p> <p>Cardioversion is the correct management, but Hemodynamic monitoring is mandatory.</p>

Notes: Clinical, laboratory and monitoring data are prepared to help diagnose AF with instability, according to scenario steps findings
The first step can be a scenario step for the nurse alone

Script SIM Nurse/Co-Instructor

List of Material

- standard monitoring
- fluids
- pumps
- vasopressors
- EKG
- ultrasound
- blood gas analysis
- troponin assay kit
- defibrillator

Set-Up Room

- emergency department

Set-Up Simulator

- SimMan 3G or TraumaHal Gaumard

SP (young woman) can also be used.
Consider even participant with good briefing

Notes: Clinical, laboratory and monitoring data are prepared to help diagnose AF with instability, according to scenario steps findings

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)

<p>Cardiologist (roleplayer) will reassess the patient. Heraises the question of narrow QRS tachycardia with instability.</p>	<p>Cardiologist (roleplayer) Should then discuss the arguments supporting AF diagnosis. Also, patient can become a bit more unstable. However, do not unnecessarily delay a good team.</p>	<p>White coat for consultant</p>
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Notes:

Scenario End Criteria

<p>Scenario ends when...</p>	<p>Expected actions during initial assessment and treatment:</p>	
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<ul style="list-style-type: none"> • AF is recognised, correct hemodynamic management is initiated together with cardioversion and hypokalemia is corrected. 	<ul style="list-style-type: none"> • physical examination • check blood-gas • check ekg • check X-ray • ask for cardiac ultrasound • ask troponin assay • ask for lab results • iv fluids (deshydratation) • norepinephrine to aim for MAP 65 mmHg (placement of arterial catheter and central venous line) • correct hypokalemia • cardioversion under sedation (Synchronised DC Shock) and assess the thromboembolic risk. 	
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Notes: end the scenario saying:
 “The patient is now going to be taken care of, thank you for solving the case”

Simulator Set-Up, Steering

	Phase 1 Start, before doctor arrives in ED	Phase 2 Doctor arrives in ED
Vitals	HR: 149 /min, irregular BP: 82/ 45 mmHg SpO2: 94% (room air) RR: 20 /min CRT 5 sec, pale and cold skin Temp: 36.8	HR: 155/min, irregular ECG: narrow , irregular QRS, BP: 80/45 mmHg SpO2: 98% with 3 l/O2 Resp. Rate: 22/min AV 155 bpm and diffuse ST-T changes

		CRT 5 sec
Text for patient	-Patient reports palpitations, diffuse thoracic pain and dyspnea ; -mild confused ;without other neurological signs (e.g. no , motor deficit);	Same as before
Other info	Critical actions: Recognising the emergency	Critical actions: cardioversion under sedation (Synchronised DC Shock) and assess the thromboembolic risk.
Management during scenario	No changes on fluids and oxygen Findings: -normal abdomen; -marbled skin ; -if peripheral arteries are checked: low pulse;	Findings: Biochemistry: K= 3.3 mmol/l, Na=148 mmol/l, Hb=17 g/dl, albumin= 6.5 g/dl ,BUN=50 mg/dl, glycemia= 90 mg/dl, all other values are within normal range. X-ray shows no particular signs. BGA: lactate of 4.5 mmol/L, ph=7,35,CO2 of 21 mmHg, O2=110 mmHg, HCO3 of 19 mEq/L, K= 3.3 mmol/l, Na=148 mmol/l, Hb=17 g/dl. Troponin I assay mild positive.

Notes: Cardiac ultrasound : LVEF 60%, normal contractility , TAPSE 22 mm, without valvulopathies, no pericardial fluid, kissing walls and compressive IVC, no thrombus in the cardiac cavities.

	Phase 3 After cardioversion	Phase 4 Aggravation without cardioversion
Vitals	HR: 88/min, regular rhythm BP: 105/58 mmHg SpO2: 99% with 3l/O2 Resp. Rate: 18/min Temp: 36.8 ECG: sinus rhythm , no other anomalies	HR: 160/min, irregular ECG: narrow irregular QRS, BP: 70/42 mmHg SpO2: 98% with 5 l/O2 Resp. Rate: 24/min AV 160 bpm and diffuse ST-T changes CRT 6 sec
Text for patient	- conscious, cooperating , no confusion; -reduction of dyspnea; -no chest pain,no palpitations;	-Patient reports palpitations, angina and dyspnea ; -aggravation of confused ;

	-normal abdomen; -normal skin color; -if peripheral arteries are checked: regular pulse;	-normal abdomen; -marbled , cold skin ; -if peripheral arteries are checked: low pulse;
Other info	Critical actions: No analgesia is provided	Expected actions: - correct hypokalemia; - Still aim for Synchronised DC Shock up to 3 attempts ; -amiodarone 300 mg iv over 10-20 min (after the 3rd shock) , repeat shock and start amiodarone 900 mg over 24 h
Management during scenario	Findings: New BGA: lactate of 3 mmol/L, ph=7,37, CO2 of 35 mmHg, O2=120 mmHg, HCO3 of 24 mEq/L, K= 3.6mmol/l, Na=147 mmol/l, Hb=15g/dl, glycemia 90 mg/dl. New cardiac ultrasound: LVEF 60%, normal contractility , TAPSE 23 mm, without valvulopathies, no pericardial fluid, no thrombus in the cardiac cavities.	Findings: New BGA: lactate of 5 mmol/L, ph=7,33, CO2 of 20 mmHg, O2=105 mmHg, HCO3 of 18 mEq/L, K= 3.3 mmol/l, Na=148 mmol/l, Hb=17 g/dl. New cardiac ultrasound: LVEF 60%, normal contractility , TAPSE 22 mm, without valvulopathies ,no pericardial fluid, kissing walls and compressive IVC, no thrombus in the cardiac cavities.

Abstract

Learning Target:	Recognition and treatment of hemodynamic unstable AFib
Description:	Hemodynamically unstable Atrial Fibrillation
Participants:	1-2 doctors, 1-2 nurses (all students)
Case Briefing:	Young woman, no medical history, E.D. admission with palpitations, dizziness, shortness of breath and and a vague sensation of chest discomfort;
List of Material:	Device to allow shock administration to actor (shock-link or similar)

Set-Up Room	ED
Set-Up Simulator:	Has to be Actor
Scenario Saver:	Cardiologist
Scenario End Criteria:	Recognition and treatment of tachycardia
Management during Scenario:	
Other:	

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Hypertensive Emergency

The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	36
<i>Scenario Briefing</i>	37
<i>Script SIM Nurse/Co-Instructor</i>	37
<i>Scenario Saver</i>	38
<i>Scenario End Criteria</i>	39
<i>Simulator Set-Up, Steering</i>	40
<i>Abstract</i>	41

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• 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 <p>CRM:</p> <ul style="list-style-type: none">• understand the importance of communication• effective teamwork to deliver a quick diagnosis and decide the next best move in patient management	<p>Where: High dependency unit (HU)</p> <p>Frame conditions: Day shift, all resources available</p>	<p>3-4 participants, students:</p> <ul style="list-style-type: none">• 1-2 doctors• 1-2 nurses <p>Wife as actor possible (she could report restlessness and confusion)</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>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.</p> <p>Confused, restless, vomiting and dehydrated, he get's admitted to HDU.</p> <p>Initial clinical examination: sweaty, warm skin, BP 190/120 mmHg, AV 120/min equal pulses at upper and lower limbs</p> <p>A wait-and-see approach is endorsed encompassing lowering the BP and fluid resuscitation.</p>	<p>Patient voice:</p> <ul style="list-style-type: none">Initially slurry, but recalls history of headache and nausea	<p>Nurse – informs on vomiting, confusion and agitation; Helps the doctor to evaluate the neurological state of the patient.</p> <p>Neurologist – in order to help confirming the severe neurological state</p> <p>Background info for Trainers: persistent or worsening hypertension may lead to neurological deterioration.</p> <p>Clinical, laboratory, CT scan and monitoring data are prepared to help diagnose the hypertensive emergency with organ dysfunction.</p>

Notes:

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 (HU)

- SimMan 3G or TraumaHal Gaumard
- Dressed casually (farmer)

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)

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

Scenario End Criteria

<p>Scenario ends when...</p>	<p>Expected actions during initial assessment and treatment:</p>	<p>Case story</p>
-------------------------------------	---	--------------------------

<ul style="list-style-type: none"> • Hypertensive encephalopathy is recognized • hemodynamics are optimized • patient is intubated 	<ul style="list-style-type: none"> • 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 	<p>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</p> <p>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 unresponsive to speech or pain.</p>
---	--	--

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”

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)	Same as before

	- S.D. reports nausea and vomiting - with persisting hypertension he becomes arresponsive to speech and pain	
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.

Abstract

Learning Target:	Management of hypertensive crisis
Description:	55 yr old patient with a history of headache and nausea, going into hypertensive encephalopathy
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:	

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SIMULATION APPROACH FOR
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Hypovolemic Shock (HS) The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	46
<i>Scenario Briefing</i>	47
<i>Script SIM Nurse/Co-Instructor</i>	47
<i>Scenario Saver</i>	48
<i>Scenario End Criteria</i>	49
<i>Simulator Set-Up, Steering 1</i>	50
<i>Simulator Set-Up, Steering 2</i>	51
<i>Abstract</i>	52

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• diagnose Hypovolemic shock (/haemorrhagic shock) based on the history, physical examination findings and lab studies;• consider other diagnostic tools such as an ultrasound (FAST/POCUS protocol) or CT scan;• acknowledge HS as a surgical emergency and call for immediate surgical evaluation;• Optimize hemodynamics to ensure adequate tissue perfusion(main goal) and immediate proceed to surgical ward. <p>CRM:</p> <ul style="list-style-type: none">• understand the importance of interdisciplinary communication;• effective teamwork to deliver a quick diagnosis ;• effective teamwork to deliver rapid management of tissue hypoperfusion.	<p>Where: Emergency room</p> <p>Who: Patient (O.D☺) is a 55-year-old obese female adult who lives with her husband</p> <p>Frame conditions: Day shift, all resources available</p>	<p>3-4 participants</p> <ul style="list-style-type: none">• 1-2 doctors• 1-2 nurses• All students• Husband as actor possible
<p>Notes: If the abdominal ultrasound is facile the diagnosis is too easy.</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Olga D. is a female adult who has been diagnosed for 5 years with abdominal aortic aneurysm. She also has poorly controlled hypertension and diabetes. Confusion, dyspnea, palpitations, low blood pressure and abdominal discomfort is what prompts her to the ED.</p> <p>Initial clinical examination: tachycardia, polypnea , SpO2=97% in room air, abdominal tenderness, poor peripheral pulses, CRT 4 sec, pale and cold skin and SBP of 88 mmHg. Fluids, analgesia, oxygen are the initial management strategies. Lab studies show: high lactate level, mild elevated troponin I level, low Hb. After initial improvement, hypotension rebounds under fluids, tachycardia increases, the patient becomes more confused and marbled skin appeared.</p>	<p>Patient: former lawyer who has been diagnosed for 5 years with abdominal aortic aneurysm.</p> <p>Before admission: her husband recalls that Olga complained of headache, abdominal discomfort and agitation. He measured her blood pressure and it was 170 mmHg. High blood pressure prompted them to call the ambulance service.</p> <p>In the ambulance her blood pressure began to drop, her SBP was 100 mmHg and a fainting sensation appeared.</p>	<p>Nurse – informs on symptoms ; should be ready to provide labs, X ray.</p> <p>Surgeon – only if medical problem is unidentified or identified too quickly (see below).</p> <p>Background info for trainers: a ruptured aneurysm causes further deterioration.</p> <p>Surgery is the ultimate life-saving intervention, but hemodynamic control is mandatory.</p>

Notes: Cardiac and abdominal ultrasound isn't part of the initial management.

Script SIM Nurse/Co-Instructor

List of Material

- standard monitoring
- fluids
- pumps
- vasopressors
- EKG
- ultrasound
- blood gas analysis
- troponin assay kit.

Set-Up Room

- emergency room

Set-Up Simulator

- SimMan 3G or TraumaHal Gaumard
- Use a wig (female patient). Dressed informally
- Ideally use an obesity kit (patient should be obese, so should look accordingly)

Notes:

How to react if the medical problem is not identified

Surgeon (role-player) will reassess the patient. He palpates the abdomen , looks at the haemoglobin level and raises the question of intra-abdominal haemorrhage.

How to react if the medical problem is identified too quickly

Surgeon (role-player) should then discuss the arguments supporting HS diagnosis.

Other comments, material needed for savers (e.g. white coat)

Husband can tell the story of repeated hypertensive events

Notes:

Scenario End Criteria

<p>Scenario ends when...</p>	<p>Expected actions during initial assessment and treatment:</p>	<p>Scenario flow</p>
<p>HS is recognised and correct hemodynamic management is initiated and surgical evaluation is asked for.</p>	<ul style="list-style-type: none"> • physical examination • check blood-gas • check ECG • check X-ray • ask for cardiac ultrasound and abdominal ultrasound (FAST/POCUS) • ask troponin assay • ask for lab results • iv fluids • activate massive haemorrhage protocol • norepinephrine to aim for MAP 65 mmHg • call surgical evaluation • with the results of cardiac/ abdominal ultrasound, diagnose haemorrhagic shock 	<ul style="list-style-type: none"> • E.R. admission with diffuse abdominal discomfort, palpitations, dyspnoea and confusion. • chest X-ray showed no particular signs. • responded well to initial management: intravenous fluids, oxygen and pain relief with morphine and paracetamol. <p>but worsens soon after: hypotension rebounds under fluids , tachycardia increases, the patient becomes more confused and marbled skin appeared.</p>

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”

Simulator Set-Up, Steering 1

	<p>Phase 1 Initial and management phase</p>	<p>Phase 2 Reassessment</p>
--	---	---------------------------------

Vitals	HR: 110/min, sinus rhythm, diffuse nonspecific ST-T changes BP: 88/45 mmHg SpO2: 97% with room air Resp. Rate: 25/min Temp: 36.8 C CRT 4 sec - abdominal sounds (auscultation): ileus; Weak peripheral pulses	HR: 135/min, sinus rhythm and diffuse nonspecific ST-T changes BP: 85/44 mmHg SpO2: 99% with 6l/O2 Resp. Rate: 27/min Temp: 36.8 - but worsens soon after: hypertension rebounds under fluids , tachycardia increases, the patient becomes more confused and marbled skin appeared.
Text for patient	-Patient reports diffuse abdominal pain; -Confused ; -if abdomen is palpated: guarding abdomen	Same as before
Other info	Critical actions:	Critical actions:
Management during scenario	- blood gas analysis: lactate 4 mmol/l, Hb=10 mg/dl. -troponin I assay mild positive X-ray shows no particular signs.	- cardiac ultrasound : LVEF 50% but inferior hypokinesia, TAPSE 18 mm, left ventricular hypertrophy, mild mitral regurgitation, no pericardial fluid, kissing walls and compressive IVC. - abdominal ultrasound: difficult to evaluate because obesity, but the examiner thinks there is fluid in Douglas. Biochemistry: Hb=8 g/dl, all other values are within normal range. BGA: lactate of 4 mmol/L; pH=7,3; PaCO2 of 22 mmHg; PaO2=104 mmHg; HCO3 of 18mEq/L

Notes:

Simulator Set-Up, Steering 2

	Phase 3 Improvement
Vitals	HR: 106/min, sinus rhythm BP: 95/55 mmHg

	SpO2: 99% with 6l/O2 Resp. Rate: 18/min Temp: 36.8
Text for patient	Same as before
Other info	Critical actions: - call surgical evaluation - if the patient is stabilized, discuss CT scan evaluation followed by OR transfer - if the patient is unstable, discuss for immediate OR transfer
Management during scenario	

Abstract

Learning Target:	Diagnose HS, prompt hemodynamic optimization, activate massive haemorrhage protocol, consider diagnosis tools (FAST/POCUS, CT scan), call for immediate surgical evaluation
Description:	A patient with ruptured abdominal aortic aneurysm is admitted to the Emergency Room; Clinical, laboratory and monitoring data are prepared to help diagnose HS; Surgery is the ultimate life-saving intervention, but hemodynamic control is mandatory.

Participants:	3-4 trainees; 1-2 role-players (nurse, surgeon)
Case Briefing:	Olga D. is a female adult who has been diagnosed for 5 years with abdominal aortic aneurysm. She also has poorly controlled hypertension and diabetes. Confusion, dyspnoea, palpitations, low blood pressure and abdominal discomfort is what prompts her to the ED.
List of Material:	<ul style="list-style-type: none"> - standard monitoring/ invasive BP measurement, central venous line - EKG; - ultrasound; - blood gas analysis; - troponin assay kit.
Set-Up Room	Emergency Room
Set-Up Simulator:	SimMan 3G or TraumaHal Gaumard, use wig and maybe obesity kit
Scenario Saver:	Surgeon – only if medical problem is unidentified or identified too quickly (see below) – role-player
Scenario End Criteria:	HS is recognised and correct hemodynamic management is initiated and surgical evaluation is asked for.
Management during Scenario:	See above
Other:	

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Musculoskeletal Injury, Acute Compartment Syndrome The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	5
<i>Scenario Saver</i>	6
<i>Scenario End Criteria</i>	7
<i>Simulator Set-Up, Steering</i>	8
<i>Abstract</i>	9

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• diagnose ACS of extremities based on the history, physical examination findings and lab results• consider other diagnostic tools such as an intra-compartmental pressure monitoring device and/or near-infrared spectroscopy (NIRS)• acknowledge ACS as a surgical emergency and call for immediate surgical evaluation• when needed, optimize hemodynamics to ensure adequate limb perfusion before proceeding to a definitive surgical management (fasciotomy) <p>CRM:</p> <ul style="list-style-type: none">• understand the importance of interdisciplinary communication• effective teamwork to deliver a quick diagnosis and decide the next best move in patient management	<p>Where: high-dependency unit (HDU)</p> <p>Frame conditions: Day shift, all resources available</p>	<p>3-4 participants, all students:</p> <ul style="list-style-type: none">• 1-2 doctors• 2 nurses• The surgeon on call as backup (confederate)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>John is a 30-year-old male adult who suffered a crush injury of his left lower limb (calf) while climbing and being trapped against a boulder for 4 hours until rescued</p> <p>Confused, dehydrated, and in pain, he gets admitted to HDU.</p> <p>A wait-and-see approach is endorsed encompassing fluid resuscitation, pain relief with iv drugs and regional techniques.</p> <p>X-ray showed no fracture</p> <p>Lab studies show initial moderate rhabdomyolysis.</p> <p>After initial improvement, the patient becomes restless.</p>	<p>Patient:</p> <ul style="list-style-type: none">• Patient reports lower limb burning pain sensation• Agitated• if extremity is stretched, pain is worse• reduced sensibility in lower left limb	<p>Nurse – informs on pain, confusion and agitation; should be ready to provide labs, X ray and details about pain management – NSAIDS, paracetamol, regional analgesia.</p> <p>Surgeon – only if medical problem is unidentified or identified too quickly (see below).</p> <p>Trainers background info: A left lower limb compartment syndrome causes further deterioration. Surgery is the ultimate life-saving intervention that must be endorsed without further delay. Meanwhile, hemodynamic optimization is warranted to avoid regional ischaemia.</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- fluids
- pumps
- standard monitoring
- NIRS monitoring
- Intracompartmental pressure monitoring device with digital display and possibility to control it remotely

Set-Up Room

high-dependency unit

Set-Up Simulator

- SimMan 3G or TraumaHal Gaumard

Notes:

Scenario Saver

How to react if the medical problem is not identified

Surgeon (roleplayer) comes to reassess patient. Asks patient about paresthesias, pain dynamics, and eventually raises the question of whether to do surgery or not for limb decompression.

How to react if the medical problem is identified too quickly

Surgeon (roleplayer) should then discuss the arguments supporting Acute Compartment Syndrome diagnosis.
However, do not unnecessarily delay a good team.

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...	Expected actions during initial assessment and treatment:	Case story
<ul style="list-style-type: none"> • Acute Compartment Syndrome is recognized • hemodynamics are optimized • surgical evaluation is asked for 	<ul style="list-style-type: none"> • physical examination • check pain dynamics • check pain with stretching • check sensation • check blood-gas • check biochemistry • check X-ray • may compare NIRS values for both lower limbs • may ask for intracompartmental pressure monitoring device with digital display • check and compare dorsalis pedis pulses • iv fluids • norepinephrine to aim for MAP 65 mmHg • may ask for POCUS • call surgical evaluation 	<p>initial clinical examination: equally warm lower limbs, good peripheral pulses, similar pulse oximetry plethysmographic waveform amplitude between the lower limbs</p> <ul style="list-style-type: none"> • dressing for puncture wound with minimal contamination; received antibiotics • responded well to initial management: intravenous fluids, ice-packs, pain relief with NSAIDS, paracetamol, and US-guided saphenous (adductor) and sciatic-popliteal nerve block with 0.2% ropivacaine and dexamethasone 4mg/20ml • pain rebounds under nerve blockade, is extreme and described as deep and burning, and increases with passive stretch • unequal plethysmographic amplitudes • patient describes paresthesia • lab studies show worsened rhabdomyolysis

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”

Simulator Set-Up, Steering

	Phase 1 Initial and management phase	Phase 2
Vitals	HR: 128/min, Sinus thrythm	HR: 114/min, Sinus rhythm

	BP: 75/40 mmHg SpO2: 98% with 4l/O2 (CO2: 28 mmHg) Resp. Rate: 28/min Temp: 37.8	BP: 93/52 SpO2: 98% with 4l/O2 (CO2: 30 mmHg) Resp. Rate: 26/min Temp: 37.8
Text for patient	<ul style="list-style-type: none"> • Patient reports lower limb pain. • Agitated (RASS +1, +2) • if asked about type of pain, J.F. reports burning pain • if LLL is stretched, J.F. reports worsened pain • if sensibility is checked for, J.F. reports diminished LLL sensibility 	Same as before
Other info	Critical actions: Recognising the emergency Call for surgical evaluation	
Management during scenario		

Notes: Initial evaluation.

Biochemistry outstanding: CK 4000 U/L; all other values are within normal range.

NIRS values: LLL 35% and RLL 56%.

X-ray shows no fracture.

BGA: lactate of 3.5 mmol/L; CO2 of 28 mmHg; HCO3 of 19mEq/L; pH of 7.45.

Compartment pressure: 32 mmHg. If POCUS asked for, then show hyperdynamic empty chambers and collapsible inferior vena cava. LLL dorsalis pedis pulse << RLL dorsalis pedis pulse.

Abstract

Learning Target:	Recognition and management of Acute Compartment Syndrome
Description:	Traumatic Compartment Syndrome, worsening in ED
Participants:	1-2 doctors, 2 nurses (all students).

Case Briefing:	Young man, mountaineering accident, crush injury of lower left limb, pain rebounding despite management
List of Material:	intracompartmental pressure monitoring device with digital display
Set-Up Room	High dependency unit
Set-Up Simulator:	Simulator with appropriate moulage
Scenario Saver:	Surgeon
Scenario End Criteria:	Surgical evaluation after recognition of Acute Compartment Syndrome
Management during Scenario:	
Other:	

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SIMULATION APPROACH FOR
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Anaphylactic Shock

The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	14
<i>Scenario Briefing</i>	15
<i>Script SIM Nurse/Co-Instructor</i>	16
<i>Scenario Saver</i>	16
<i>Scenario End Criteria</i>	17
<i>Simulator Set-Up, Steering</i>	18
<i>Abstract</i>	20

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• diagnose and manage Severe anaphylaxis/ Anaphylactic shock• consider other Differential diagnosis for post-operative shock <p>CRM:</p> <ul style="list-style-type: none">• Leadership• Decision making• communication	<p>Where:</p> <p>post-operative setting, High dependency unit</p> <p>Frame conditions:</p> <ul style="list-style-type: none">• early day shift• university hospital• all resources available	<p>students and/or trainee physicians and/or trainee nurses</p> <p>Roles:</p> <ul style="list-style-type: none">• 2 doctors, senior and junior or both junior• 1 or 2 nurses
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Mr. Anton J. is a 54-year-old man, who is in day 3 after a liver tumour resection.</p> <p>Smoker, no other CV Risk factors, no other Known illnesses.</p> <p>Intra-op and day 1 there was bleeding, which required PRBC transfusion, good evolution in the last 24 hours.</p> <p>Drains are still in place and have produced 150 ml in the last 12 hs.</p> <p>He has been indicated a fresh frozen plasma transfusion by the night shift team just before handover, which is inplace, dripping.</p>		<p>If nurse is actor and not trainee – Available for permanent assistance should be aware of surroundings and trained in assisting airway management</p>
Notes:		

Script SIM Nurse/Co-Instructor

List of Material

- Crash cart
- Fluids
- iv cannulas
- arterial line if required
- O2 source and nebulizer
- airway management cart
- external defibrillator
- medication (labelled)
epinephrine, norepinephrine,
vasopressin, glucagon,
methylene blue) –
depending on local availability.
hydrocortisone, dexamethasone,
methylprednisolone,
depending on local availability.
- H1 blockers – diphenhydramine
- H2 blockers – cimetidine or
ranitidine.

Set-Up Room

- hospital bed with
- high fidelity simulator
- vital functions monitor

Set-Up Simulator

- human patient sim
- hospital gown
- only ECG in place, NIBP and SpO2
available
- abdominal drains in place
- 1 unit of FFP (marked
as such) dripping

Notes:

Scenario Saver

How to react if the medical problem is not identified

the nurse (actor) can say everything happened when FFP infusion was started

- if unclear how to manage – send senior in

How to react if the medical problem is identified too quickly

- patient can have refractory anaphylaxis or poor response to initial therapy
- case can be led towards cardiac arrest (V fib, responds to first shock)

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...

- airway is controlled
- epinephrine has been given
- patient is stable
- adjunctive therapy has been 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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2
Vitals	HR: 105/min, sinus rhythm BP: 96/55 mmHg SpO2: 97% CO2: unavailable Resp. Rate: 22/min	HR: 135/min, sinus rhythm BP: 78/45 mmHg SpO2: 87% CO2: unavailable Resp. Rate: 30/min

	Temp: 37.4 Dysphonia, at pulmonary auscultation - sibilant rhonchi	Temp: 37.4 Dysphonia, stridor, sibilant rhonchi
Text for patient	I feel dizzy doctor, I'm having trouble breathing, there's a weight on my chest, I feel itchy all over	- I'm having trouble breathing, there's a weight on my chest (low voice, breathless, 2-3 words per sentence)
Other info		Critical actions: ABCDE approach epinephrine 5-20 mcg iv bolus or 0.3-.5 mg IM fluid bolus 20 ml/kg
Management during scenario		- check iv access - place patient on oxygen - full patient monitoring - ask for arterial blood gas blood count and dynamics - should consider early airway management

Notes: Lab values should not induce alternate diagnosis, Hb should be stable, at discretion of facilitator, no other organ dysfunction.
If POCUS asked for, hyperdynamic chambers, collapsible IVC.
If requested, ABG – lactate 2.2 mmol/l, CO2 31 mmHg, pH 7.35

	Phase 3 If epinephrine given	Phase 4 If epinephrine and adjunctive therapy given	Phase 5 If epinephrine not given
Vitals	HR: 127/min, sinus rhythm BP: 82/55 mmHg SpO2: 92% if patient on oxygen, if in room air, 88% CO2: unavailable Resp. Rate: 26/min Temp: 37.4	HR: 107/min, sinus rhythm BP: 105/68 mmHg SpO2: 98% if patient on oxygen, if in room air, 93% CO2: unavailable Resp. Rate: 22/min Temp: 37.4	HR: 160/min, sinus rhythm BP: 50/30 mmHg SpO2: 80% CO2: unavailable Resp. Rate: 40/min, shallow breathing Temp: 37.4

Text for patient	I feel a little better, but still dizzy	Feeling better	moans, incomprehensible sounds
Other info	if stage reached too early, facilitator can keep patient in state 2 and expect alternatives to conventional therapy (vasopressin 0.001-0.004 units/min or glucagon 1 mg iv over 5 min for beta blocker reversal or methylene blue 1.5-2 mg/kg iv bolus)		
Management during scenario	<ul style="list-style-type: none"> - should consider arterial line - should consider second epinephrine dose or iv continuous drip - should consider adjunctive therapy (corticoids, anti H1/H2) 		<ul style="list-style-type: none"> - should give epinephrine - should perform airway management - difficult physiologic and/or anatomic airway - should consider glottic edema and prepare with cricothyrotomy kit

Abstract

Learning Target:	Recognition and management of Anaphylaxis / Anaphylactic shock
Description:	Patient, day 3 post-op, develops an anaphylactic shock to FFP transfusion
Participants:	<p>2 doctors, senior and junior or both junior</p> <p>1 or 2 nurses</p> <p>Suitable also for residents</p>
Case Briefing:	54-year-old man, who is in day 3 after a liver tumour resection. Intra-op and day 1 there was bleeding, which required PRBC transfusion, good evolution in the last 24 hours.

	Drains are still in place and have produced 150 ml in the last 12 hs.
List of Material:	
Set-Up Room	High dependency unit
Set-Up Simulator:	Hospital bed, gown, FFP perfusion
Scenario Saver:	Senior physician
Scenario End Criteria:	<ul style="list-style-type: none"> - airway is controlled - epinephrine has been given - adjunctive therapy has been given
Management during Scenario:	
Other:	

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Atrial Fibrillation With Instability The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	25
<i>Scenario Briefing</i>	26
<i>Script SIM Nurse/Co-Instructor</i>	26
<i>Scenario Saver</i>	27
<i>Scenario End Criteria</i>	28
<i>Simulator Set-Up, Steering</i>	29
<i>Abstract</i>	31

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Management of Adult Tachycardia(with pulse) based on ABCDE approach;• consider other diagnostic tools such as an ultrasound (in order to exclude other causes of circulatory shock)• acknowledge AF with cardiovascular instability as a emergency and apply synchronized DC shock +/- amiodarone• Optimize hemodynamics to ensure adequate tissue perfusion• Asses thromboembolic risk and if necessary consider anticoagulation <p>CRM:</p> <ul style="list-style-type: none">• understand the importance of interdisciplinary communication;• effective teamwork to deliver a quick diagnosis as well as management of an emergency	<p>Where: Emergency department</p> <p>Frame conditions: Day shift in the ED</p> <ul style="list-style-type: none">• Chest X-ray• EKG• Complete blood examination• blood gas analysis• troponin I• cardiac ultrasound are being done	<p>3-4 participants, students:</p> <ul style="list-style-type: none">• 1-2 doctors• 1-2 nurses <ul style="list-style-type: none">• The cardiologist and intensive care medical doctor on call as backup (confederates)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Olga is a 24-year-old female adult who has been partying all night; She barely touched alcohol (she has to work the next day); She has no medical history.</p> <ul style="list-style-type: none"> • E.D. admission with palpitations, dizziness, shortness of breath and a vague sensation of chest discomfort; <p>At the initial examination signs of circulatory shock are seen.</p> <p>initial clinical examination:</p> <ul style="list-style-type: none"> • tachycardia(149 bpm) • polypnea (RR=20/min), SpO2=94% room air, • poor peripheral pulses, • CRT 5 sec, • pale and cold skin • SBP of 82 mmHg <p>Fluids and oxygen are the initial management strategies. She is put on iv fluids (500 ml crystalloid and 500 ml G5%) and 3 l of non-invasive oxygen. No improvement is seen, the doctor is called. She is currently with standard non-invasive monitorization and with 1 peripheral IV access (G18).</p>	<p>SP/manikin voice:</p> <ul style="list-style-type: none"> • patient (Olga) is a 24-year-old female adult who has been partying all night (her best friend's bachelor party); • she barely touched alcohol (she has to work the next day); • she went home at 2 :00 am <p>(she remembers she was tired and a little dizzy)</p> <ul style="list-style-type: none"> • Always healthy, apart for short episodes of palpitations (heart like running) after strenuous work (never investigated) • she woke up at 7:00 am complaining of palpitations and dizziness; • Scared she went to the emergency department 	<p>Nurse - informs on symptoms; should be ready to provide labs, X-ray.</p> <p>Cardiologist - only if medical problem is unidentified or identified too quickly (see below).</p> <p>Background for Trainers: tachycardia (AF in this situation) can cause cardiovascular instability (e.g. hypotension, tissue hypoperfusion , shock, myocardial ischemia...)</p> <p>Cardioversion is the correct management, but Hemodynamic monitoring is mandatory.</p>

Notes: Clinical, laboratory and monitoring data are prepared to help diagnose AF with instability, according to scenario steps findings
The first step can be a scenario step for the nurse alone

Script SIM Nurse/Co-Instructor

List of Material

- standard monitoring
- fluids
- pumps
- vasopressors
- EKG
- ultrasound
- blood gas analysis
- troponin assay kit
- defibrillator

Set-Up Room

- emergency department

Set-Up Simulator

- SimMan 3G or TraumaHal Gaumard

SP (young woman) can also be used.
Consider even participant with good briefing

Notes: Clinical, laboratory and monitoring data are prepared to help diagnose AF with instability, according to scenario steps findings

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)

<p>Cardiologist (roleplayer) will reassess the patient. Heraises the question of narrow QRS tachycardia with instability.</p>	<p>Cardiologist (roleplayer) Should then discuss the arguments supporting AF diagnosis. Also, patient can become a bit more unstable. However, do not unnecessarily delay a good team.</p>	<p>White coat for consultant</p>
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Notes:

Scenario End Criteria

<p>Scenario ends when...</p>	<p>Expected actions during initial assessment and treatment:</p>	
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<ul style="list-style-type: none"> • AF is recognised, correct hemodynamic management is initiated together with cardioversion and hypokalemia is corrected. 	<ul style="list-style-type: none"> • physical examination • check blood-gas • check ekg • check X-ray • ask for cardiac ultrasound • ask troponin assay • ask for lab results • iv fluids (deshydration) • norepinephrine to aim for MAP 65 mmHg (placement of arterial catheter and central venous line) • correct hypokalemia • cardioversion under sedation (Synchronised DC Shock) and assess the thromboembolic risk. 	
---	--	--

Notes: end the scenario saying:
 “The patient is now going to be taken care of, thank you for solving the case”

Simulator Set-Up, Steering

	Phase 1 Start, before doctor arrives in ED	Phase 2 Doctor arrives in ED
Vitals	HR: 149 /min, irregular BP: 82/ 45 mmHg SpO2: 94% (room air) RR: 20 /min CRT 5 sec, pale and cold skin Temp: 36.8	HR: 155/min, irregular ECG: narrow , irregular QRS, BP: 80/45 mmHg SpO2: 98% with 3 l/O2 Resp. Rate: 22/min AV 155 bpm and diffuse ST-T changes

		CRT 5 sec
Text for patient	-Patient reports palpitations, diffuse thoracic pain and dyspnea ; -mild confused ;without other neurological signs (e.g. no , motor deficit);	Same as before
Other info	Critical actions: Recognising the emergency	Critical actions: cardioversion under sedation (Synchronised DC Shock) and assess the thromboembolic risk.
Management during scenario	No changes on fluids and oxygen Findings: -normal abdomen; -marbled skin ; -if peripheral arteries are checked: low pulse;	Findings: Biochemistry: K= 3.3 mmol/l, Na=148 mmol/l, Hb=17 g/dl, albumin= 6.5 g/dl ,BUN=50 mg/dl, glycemia= 90 mg/dl, all other values are within normal range. X-ray shows no particular signs. BGA: lactate of 4.5 mmol/L, ph=7,35,CO2 of 21 mmHg, O2=110 mmHg, HCO3 of 19 mEq/L, K= 3.3 mmol/l, Na=148 mmol/l, Hb=17 g/dl. Troponin I assay mild positive.

Notes: Cardiac ultrasound : LVEF 60%, normal contractility , TAPSE 22 mm, without valvulopathies, no pericardial fluid, kissing walls and compressive IVC, no thrombus in the cardiac cavities.

	Phase 3 After cardioversion	Phase 4 Aggravation without cardioversion
Vitals	HR: 88/min, regular rhythm BP: 105/58 mmHg SpO2: 99% with 3l/O2 Resp. Rate: 18/min Temp: 36.8 ECG: sinus rhythm , no other anomalies	HR: 160/min, irregular ECG: narrow irregular QRS, BP: 70/42 mmHg SpO2: 98% with 5 l/O2 Resp. Rate: 24/min AV 160 bpm and diffuse ST-T changes CRT 6 sec
Text for patient	- conscious, cooperating , no confusion; -reduction of dyspnea; -no chest pain,no palpitations;	-Patient reports palpitations, angina and dyspnea ; -aggravation of confused ;

	-normal abdomen; -normal skin color; -if peripheral arteries are checked: regular pulse;	-normal abdomen; -marbled , cold skin ; -if peripheral arteries are checked: low pulse;
Other info	Critical actions: No analgesia is provided	Expected actions: - correct hypokalemia; - Still aim for Synchronised DC Shock up to 3 attempts ; -amiodarone 300 mg iv over 10-20 min (after the 3rd shock) , repeat shock and start amiodarone 900 mg over 24 h
Management during scenario	Findings: New BGA: lactate of 3 mmol/L, ph=7,37, CO2 of 35 mmHg, O2=120 mmHg, HCO3 of 24 mEq/L, K= 3.6mmol/l, Na=147 mmol/l, Hb=15g/dl, glycemia 90 mg/dl. New cardiac ultrasound: LVEF 60%, normal contractility , TAPSE 23 mm, without valvulopathies, no pericardial fluid, no thrombus in the cardiac cavities.	Findings: New BGA: lactate of 5 mmol/L, ph=7,33, CO2 of 20 mmHg, O2=105 mmHg, HCO3 of 18 mEq/L, K= 3.3 mmol/l, Na=148 mmol/l, Hb=17 g/dl. New cardiac ultrasound: LVEF 60%, normal contractility , TAPSE 22 mm, without valvulopathies ,no pericardial fluid, kissing walls and compressive IVC, no thrombus in the cardiac cavities.

Abstract

Learning Target:	Recognition and treatment of hemodynamic unstable AFib
Description:	Hemodynamically unstable Atrial Fibrillation
Participants:	1-2 doctors, 1-2 nurses (all students)
Case Briefing:	Young woman, no medical history, E.D. admission with palpitations, dizziness, shortness of breath and and a vague sensation of chest discomfort;
List of Material:	Device to allow shock administration to actor (shock-link or similar)

Set-Up Room	ED
Set-Up Simulator:	Has to be Actor
Scenario Saver:	Cardiologist
Scenario End Criteria:	Recognition and treatment of tachycardia
Management during Scenario:	
Other:	

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Hypertensive Emergency

The Emergency Institute for Cardiovascular Diseases (EICD)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	36
<i>Scenario Briefing</i>	37
<i>Script SIM Nurse/Co-Instructor</i>	37
<i>Scenario Saver</i>	38
<i>Scenario End Criteria</i>	39
<i>Simulator Set-Up, Steering</i>	40
<i>Abstract</i>	41

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• 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 <p>CRM:</p> <ul style="list-style-type: none">• understand the importance of communication• effective teamwork to deliver a quick diagnosis and decide the next best move in patient management	<p>Where: High dependency unit (HU)</p> <p>Frame conditions: Day shift, all resources available</p>	<p>3-4 participants, students:</p> <ul style="list-style-type: none">• 1-2 doctors• 1-2 nurses <p>Wife as actor possible (she could report restlessness and confusion)</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>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.</p> <p>Confused, restless, vomiting and dehydrated, he get's admitted to HDU.</p> <p>Initial clinical examination: sweaty, warm skin, BP 190/120 mmHg, AV 120/min equal pulses at upper and lower limbs</p> <p>A wait-and-see approach is endorsed encompassing lowering the BP and fluid resuscitation.</p>	<p>Patient voice:</p> <ul style="list-style-type: none">Initially slurry, but recalls history of headache and nausea	<p>Nurse – informs on vomiting, confusion and agitation; Helps the doctor to evaluate the neurological state of the patient.</p> <p>Neurologist – in order to help confirming the severe neurological state</p> <p>Background info for Trainers: persistent or worsening hypertension may lead to neurological deterioration.</p> <p>Clinical, laboratory, CT scan and monitoring data are prepared to help diagnose the hypertensive emergency with organ dysfunction.</p>

Notes:

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 (HU)

- SimMan 3G or TraumaHal Gaumard
- Dressed casually (farmer)

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)

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

Scenario End Criteria

<p>Scenario ends when...</p>	<p>Expected actions during initial assessment and treatment:</p>	<p>Case story</p>
-------------------------------------	---	--------------------------

<ul style="list-style-type: none"> • Hypertensive encephalopathy is recognized • hemodynamics are optimized • patient is intubated 	<ul style="list-style-type: none"> • 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 	<p>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</p> <p>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 unresponsive to speech or pain.</p>
---	--	--

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”

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)	Same as before

	- S.D. reports nausea and vomiting - with persisting hypertension he becomes arresponsive to speech and pain	
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.

Abstract

Learning Target:	Management of hypertensive crisis
Description:	55 yr old patient with a history of headache and nausea, going into hypertensive encephalopathy
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:	

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SIMULATION APPROACH FOR
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Hypovolemic Shock (HS) The Emergency Institute for Cardiovascular Diseases (EICD)



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Summary

<i>Scenario Description</i>	46
<i>Scenario Briefing</i>	47
<i>Script SIM Nurse/Co-Instructor</i>	47
<i>Scenario Saver</i>	48
<i>Scenario End Criteria</i>	49
<i>Simulator Set-Up, Steering 1</i>	50
<i>Simulator Set-Up, Steering 2</i>	51
<i>Abstract</i>	52

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none"> • diagnose Hypovolemic shock (/haemorrhagic shock) based on the history, physical examination findings and lab studies; • consider other diagnostic tools such as an ultrasound (FAST/POCUS protocol) or CT scan; • acknowledge HS as a surgical emergency and call for immediate surgical evaluation; • Optimize hemodynamics to ensure adequate tissue perfusion(main goal) and immediate proceed to surgical ward. <p>CRM:</p> <ul style="list-style-type: none"> • understand the importance of interdisciplinary communication; • effective teamwork to deliver a quick diagnosis ; • effective teamwork to deliver rapid management of tissue hypoperfusion. 	<p>Where: Emergency room</p> <p>Who: Patient (O.D☺) is a 55-year-old obese female adult who lives with her husband</p> <p>Frame conditions: Day shift, all resources available</p>	<p>3-4 participants</p> <ul style="list-style-type: none"> • 1-2 doctors • 1-2 nurses • All students • Husband as actor possible
<p>Notes: If the abdominal ultrasound is facile the diagnosis is too easy.</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Olga D. is a female adult who has been diagnosed for 5 years with abdominal aortic aneurysm. She also has poorly controlled hypertension and diabetes. Confusion, dyspnea, palpitations, low blood pressure and abdominal discomfort is what prompts her to the ED.</p> <p>Initial clinical examination: tachycardia, polypnea , SpO2=97% in room air, abdominal tenderness, poor peripheral pulses, CRT 4 sec, pale and cold skin and SBP of 88 mmHg. Fluids, analgesia, oxygen are the initial management strategies. Lab studies show: high lactate level, mild elevated troponin I level, low Hb. After initial improvement, hypotension rebounds under fluids, tachycardia increases, the patient becomes more confused and marbled skin appeared.</p>	<p>Patient: former lawyer who has been diagnosed for 5 years with abdominal aortic aneurysm.</p> <p>Before admission: her husband recalls that Olga complained of headache, abdominal discomfort and agitation. He measured her blood pressure and it was 170 mmHg. High blood pressure prompted them to call the ambulance service.</p> <p>In the ambulance her blood pressure began to drop, her SBP was 100 mmHg and a fainting sensation appeared.</p>	<p>Nurse – informs on symptoms ; should be ready to provide labs, X ray.</p> <p>Surgeon – only if medical problem is unidentified or identified too quickly (see below).</p> <p>Background info for trainers: a ruptured aneurysm causes further deterioration.</p> <p>Surgery is the ultimate life-saving intervention, but hemodynamic control is mandatory.</p>

Notes: Cardiac and abdominal ultrasound isn't part of the initial management.

Script SIM Nurse/Co-Instructor

List of Material

- standard monitoring
- fluids
- pumps
- vasopressors
- EKG
- ultrasound
- blood gas analysis
- troponin assay kit.

Set-Up Room

- emergency room

Set-Up Simulator

- SimMan 3G or TraumaHal Gaumard
- Use a wig (female patient). Dressed informally
- Ideally use an obesity kit (patient should be obese, so should look accordingly)

Notes:

Scenario Saver

How to react if the medical problem is not identified

Surgeon (role-player) will reassess the patient. He palpates the abdomen , looks at the haemoglobin level and raises the question of intra-abdominal haemorrhage.

How to react if the medical problem is identified too quickly

Surgeon (role-player) should then discuss the arguments supporting HS diagnosis.

Other comments, material needed for savers (e.g. white coat)

Husband can tell the story of repeated hypertensive events

Notes:

Scenario End Criteria

Scenario ends when...	Expected actions during initial assessment and treatment:	Scenario flow
<p>HS is recognised and correct hemodynamic management is initiated and surgical evaluation is asked for.</p>	<ul style="list-style-type: none"> • physical examination • check blood-gas • check ECG • check X-ray • ask for cardiac ultrasound and abdominal ultrasound (FAST/POCUS) • ask troponin assay • ask for lab results • iv fluids • activate massive haemorrhage protocol • norepinephrine to aim for MAP 65 mmHg • call surgical evaluation • with the results of cardiac/ abdominal ultrasound, diagnose haemorrhagic shock 	<ul style="list-style-type: none"> • E.R. admission with diffuse abdominal discomfort, palpitations, dyspnoea and confusion. • chest X-ray showed no particular signs. • responded well to initial management: intravenous fluids, oxygen and pain relief with morphine and paracetamol. <p>but worsens soon after: hypotension rebounds under fluids , tachycardia increases, the patient becomes more confused and marbled skin appeared.</p>

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”

Simulator Set-Up, Steering 1

	Phase 1 Initial and management phase	Phase 2 Reassessment
Vitals	HR: 110/min, sinus rhythm, diffuse nonspecific ST-T changes	HR: 135/min, sinus rhythm and diffuse nonspecific ST-T changes

	BP: 88/45 mmHg SpO2: 97% with room air Resp. Rate: 25/min Temp: 36.8 C CRT 4 sec - abdominal sounds (auscultation): ileus; Weak peripheral pulses	BP: 85/44 mmHg SpO2: 99% with 6l/O2 Resp. Rate: 27/min Temp: 36.8 - but worsens soon after: hypertension rebounds under fluids , tachycardia increases, the patient becomes more confused and marbled skin appeared.
Text for patient	-Patient reports diffuse abdominal pain; -Confused ; -if abdomen is palpated: guarding abdomen	Same as before
Other info	Critical actions:	Critical actions:
Management during scenario	- blood gas analysis: lactate 4 mmol/l, Hb=10 mg/dl. -troponin I assay mild positive X-ray shows no particular signs.	- cardiac ultrasound : LVEF 50% but inferior hypokinesia, TAPSE 18 mm, left ventricular hypertrophy, mild mitral regurgitation, no pericardial fluid, kissing walls and compressive IVC. - abdominal ultrasound: difficult to evaluate because obesity, but the examiner thinks there is fluid in Douglas. Biochemistry: Hb=8 g/dl, all other values are within normal range. BGA: lactate of 4 mmol/L; pH=7,3; PaCO2 of 22 mmHg; PaO2=104 mmHg; HCO3 of 18mEq/L

Notes:

Simulator Set-Up, Steering 2

	Phase 3 Improvement
Vitals	HR: 106/min, sinus rhythm BP: 95/55 mmHg SpO2: 99% with 6l/O2 Resp. Rate: 18/min Temp: 36.8
Text for patient	Same as before

Other info	Critical actions: - call surgical evaluation - if the patient is stabilized, discuss CT scan evaluation followed by OR transfer - if the patient is unstable, discuss for immediate OR transfer
Management during scenario	

Abstract

Learning Target:	Diagnose HS, prompt hemodynamic optimization, activate massive haemorrhage protocol, consider diagnosis tools (FAST/POCUS, CT scan), call for immediate surgical evaluation
Description:	A patient with ruptured abdominal aortic aneurysm is admitted to the Emergency Room; Clinical, laboratory and monitoring data are prepared to help diagnose HS; Surgery is the ultimate life-saving intervention, but hemodynamic control is mandatory.
Participants:	3-4 trainees; 1-2 role-players (nurse, surgeon)
Case Briefing:	Olga D. is a female adult who has been diagnosed for 5 years with abdominal aortic aneurysm. She also has poorly controlled hypertension and diabetes. Confusion, dyspnoea, palpitations, low blood pressure and abdominal discomfort is what prompts her to the ED.

List of Material:	<ul style="list-style-type: none"> - standard monitoring/ invasive BP measurement, central venous line - EKG; - ultrasound; - blood gas analysis; - troponin assay kit.
Set-Up Room	Emergency Room
Set-Up Simulator:	SimMan 3G or TraumaHal Gaumard, use wig and maybe obesity kit
Scenario Saver:	Surgeon – only if medical problem is unidentified or identified too quickly (see below) – role-player
Scenario End Criteria:	HS is recognised and correct hemodynamic management is initiated and surgical evaluation is asked for.
Management during Scenario:	See above
Other:	

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Cardiogenic Shock Hospital Clinic Barcelona (HUBc)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	57
<i>Scenario Course</i>	58
<i>Scenario Briefing</i>	59
<i>Script SIM Nurse/Co-Instructor</i>	60
<i>Scenario Saver</i>	60
<i>Scenario End Criteria</i>	61
<i>Simulator Set-Up, Steering – Step1 (ABCDE)</i>	62
<i>Simulator Set-Up, Steering – Step 2a (diagnostics)</i>	63
<i>Simulator Set-Up, Steering – Step 2b (therapy)</i>	64
<i>Simulator Set-Up, Steering – Step 3 (supported ventilation)</i>	65
<i>Simulator Set-Up, Steering – Step 4 (controlled ventilation)</i>	66
<i>Simulator Set-Up, Steering – Step 5 (transfer)</i>	67
<i>Abstract</i>	68

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none"> • To recognise signs and symptoms of cardiogenic shock • To follow a diagnosis approach without delaying initial treatment • To initiate supportive management until coronarography/PCI <p>CRM:</p> <ul style="list-style-type: none"> • Knowing the environment and resources available • Anticipate and plan • Call for help • Use the 3Cs to communicate (citing names, clear instructions, close the loop) • Situation awareness (be aware of the initial situation and re-asses, • Share the mental model and gather team feedback • Organise team <ul style="list-style-type: none"> > Distribution of roles > Distribution of tasks 	<p>Where:</p> <ul style="list-style-type: none"> • Emergency department <p>Who:</p> <ul style="list-style-type: none"> • Patient with acute symptoms of a cardiogenic shock due to a myocardial infarction <p>Frame conditions:</p> <ul style="list-style-type: none"> • Emergency room • CathLab in that hospital is available, but has to be organized 	<p>Medical students 5th or 6th year or Residents 1st year Nurse students 4th year</p> <ul style="list-style-type: none"> • son/daughter as next of kin (close relative) <ul style="list-style-type: none"> ➔ if not available, the information can be given via telephone (fictional family doctor) • Emergency physician as backup rescue • Nurse assistant as confederate
<p>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.</p>		

Scenario Course

Storyboard of the Scenario

1. ABCDE

2a. Diagnostics

(back and forth)

2b. (fruitless) therapy

3. Supported ventilation

4. Controlled ventilation

5. Therapy

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>You are working in a hospital. A 77 year-old female is brought to the emergency department with a complaint of asthenia and dizziness by her grandson/granddaughter. She has a past medical history of hypertension, Diabetes Mellitus, hyperlipaemia, obesity and tobacco smoking. Medication: enalapril, metformin, atorvastatin.</p>	<p>Medical student or resident: You are working in the emergency department and you are the first health care professional in contact with the patient.</p> <p>Assess the patient, try to find a diagnosis, and make a therapy decision.</p> <p>You will work with a colleague nurse assistant.</p> <p>You will get help, when you call for it</p> <p>Nurse student: A 77 year-old female is brought to the emergency department by her grandson/granddaughter. You are asked to take care of her. You will enter the room with a colleague. In the room there is a nurse assistant</p>	<p>Emergency doctor: You are a senior doctor at the emergency department. You will brief and ask the participants to take care 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</p> <p>Nurse assistant: You are a nurse assistant in the emergency department. You will be in the room when the participant(s) arrive, help the participants with material and medication location.</p> <p>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..."</p> <p>Grandon/granddaughter (next of kin): You are the patient's closest relative. Provide all information needed: Your grannie complaints of asthenia and dizziness after gardening</p>

Notes: This scenario briefing is for 2 students (medical and nurse). A second medical student can be added, either from the beginning of the case or as help to the first student
If the only participant is a nurse student, the senior emergency doctor will remain in the scenario from the beginning. A second nurse student can be added, either from the beginning of the case or as help to the first student.
This scenario briefing is for 2 students (medical and nurse); if no participant is available as next of kin: a virtual phone call with a fictitious family doctor could provide the information needed

Script SIM Nurse/Co-Instructor

List of Material

- standard ER-room with monitoring, defibrillator, equipment, stretcher
- prepared lab-/POC-results: full blood count, glucose, e'lytes, urea, creatinine, liver function, creatinine-kinase, lactate, troponin
- Point of care with increased lactate, low SvO (if venous), hypoxemia (if arterial).
- Arterial line
- Central line
- Urine catheter
prepared 12-lead-ecg with no ST-segment-elevation (T inversion, ST-segment depression)
- Echo: pre-recorded videos with heart failure
- Chest X-ray with congestion

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
- x-ray (chest)
- echo-video (heart)

Set-Up Simulator

- patient with gardening clothes (dirty?) on a stretcher emphasizing the age of the patient (77 yo female) (if available a grey-haired wig to emphasize the age of the patient)
- when the scenario starts, the patient (computerized mannequin/simulator) is not monitored, has neither an i.v. line nor oxygen

Notes: x-ray machine available? (if unavaible send participants out of the room)

real time echography (if not available use any item as receiving transducer, US made by familiar and show video on a tablet computer)

Scenario Saver

How to react if the medical problem is not identified

If the participant/s are not able to reach a diagnosis or if they reach a diagnosis but they don't treat the patient accordingly, 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..."

How to react if the medical problem is identified too quickly

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!

When the scenario is solved, regardless of the timing, the senior emergency doctor (confederate) will enter the scenario and the participants will resume the case. If something relevant is missing the confederates will point it out

Other comments, material needed for savers (e.g. white coat)

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.

Scenario End Criteria

Scenario ends when...

Timing

Expected (key) actions

<p>all of the following statements are true:</p> <ul style="list-style-type: none"> • The diagnosis of cardiogenic shock is reached • Supportive treatment is initiated • The option of coronary arteriography/ICP has been considered. <p>These can be achieved by the participants on their own or with help of the scenario saver</p> <p>Then the emergency doctor (confederate) will enter the scenario, and ask the participants for a handover</p>	<p>The scenario is planned to last (15-)20 minutes.</p> <p>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)</p> <p>Instructors could help if the previous points have not been achieved within the stipulated time via the confederate..</p>	<ul style="list-style-type: none"> • finish of the ABCDE approach (or time) • Initiating diagnostics • Initiating basic therapy • Recognizing inefficient efforts • Not initiating NIMV (deterioration) • Sedation/intubation • Therapyoptions • 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”

Simulator Set-Up, Steering – Step1 (ABCDE)

Vital Signs	Text for Patient	Management during scenario
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<p>Eyes blinking Airway clear Resp. Rate: 22/min Pulmo: bilateral lung crackles SpO₂: 89% (98% with O₂) CO₂: 33 cm H₂O HR: 90/min, pulses weak Heart: mitral systolic murmur ECG: Sinus rhythm BP: 75/50 mmHg Temp: 36,0°C Glycaemia: 180mg/dl</p> <p>Initial situation</p> <ul style="list-style-type: none"> - Patient is not monitored - Patient is tachypnoeic on room air - Patients is conscious and calm. However, she feels dizzy 	<p>Patient is fully orientated and will answer to all questions correctly (name, age, medication) Optionally the next of kin can provide all the information</p> <p>The patient has been feeling unwell for one day. She was gardening and out of the blue she became dizzy and progressively tired.</p> <p>If patient is asked: (next of kin answers)</p> <ul style="list-style-type: none"> • No Fever • No Chest Pain • No vomiting/diarrhoea • No other symptoms <p>The next of kin says that the patient's hands are colder than normal</p>	<p>The patient is in the room with the nurse assistant (familiar), when the participants arrive.</p> <p>Patients is conscious but slightly agitated because she is scared and in pain</p> <p>During anamnesis and ABCDE first survey patient will remain stable.</p> <p>Monitoring, diagnostics and procedures are available on request</p> <p>The next of kin will leave the room if asked The nurse assistant (familiar) will suggest physical examination if not done by the participant</p> <p>Trigger for next step is either completion of first ABCDE and diagnosis (or time).</p>
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Notes:

Simulator Set-Up, Steering – Step 2a (diagnostics)

<p>Vital Signs</p>	<p>Text for Patient</p>	<p>Management during scenario</p>
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<p>Eyes blinking Airway clear Resp. Rate: 22/min Pulmo: crackles SpO₂: 89% HR: 90/min ECG: Sinus rhythm (no ST-elevation) BP: 75/50 mmHg CO₂: 62 cm H₂O Temp: 36,1 °C Glycaemia: 150mg/dl</p> <p>Blood results / Lab: Troponin level is elevated, NT-proBNP level is elevated</p> <p>POC (arterial blood gases): hypoxemia, no hypercapnia, electrolytes normal or slightly abnormal (noise). Lactate >2mmol/L or >20mg/dl</p> <p>Chest X-Ray: Congestive</p> <p>Transthoracic echocardiography: Left ventricular systolic dysfunction, +/- mitral regurgitation</p>	<p>The patient will remain conscious. She is short of breath, only three- word-sentences.</p> <p>If she is asked, she will say she feels no better</p>	<p>Patient remains stable.</p> <p>Familiar will help with monitoring and treatment. Familiar will always close the loop when communicating and also verbalise all actions performed.</p> <p>Please prepare and if asked for, provide after a reasonable time: - 12-lead-ecg - blood results - POC (arterial gases) - chest X-ray - Transthoracic echocardi- graphy (prepared Video)</p> <p>If possible “play” the diagnostic, e.g. for x-ray everybody has to leave the room or simulate a transducer when showing the Transthoracic echocardiography</p> <p>Trigger for next step are therapy attempts.</p>
---	--	---

Notes: if clinical symptoms are precise and clear, a learning aim could be not to delay treatment with further (unnecessary diagnostic, especially in critical patients)

Simulator Set-Up, Steering – Step 2b (therapy)

<p>Vital Signs</p>	<p>Text for Patient</p>	<p>Management during scenario</p>
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<p>same as in Step 2 a:</p> <p>Eyes blinking Airway clear Resp. Rate: 22/min Pulmo: crackles SpO2: 89% HR: 90/min ECG: Sinus rhythm (no ST-elevation) BP: 75/50 mmHg CO2: 62 cm H2O Temp: 36,1 °C Glycaemia: 150mg/dl</p> <p>When applied:</p> <ul style="list-style-type: none"> • Oxygen <ul style="list-style-type: none"> > max. 90% (nasal prongs) > max. 94% (venturi mask) > RR: 20/min • ephedrine (only 30sec) <ul style="list-style-type: none"> > HR: 100/min > BP: 90/65 mmHg • dopamine/dobutamine (continuously) <ul style="list-style-type: none"> > HR: 100/min > BP: 90/65 mmHg • fluid challenge <ul style="list-style-type: none"> > no effect 	<p>The patient will remain conscious. She is short of breath, only three-word-sentences.</p> <p>If she is asked, she will say she feels no better</p>	<p>Patient remains stable.</p> <p>Familiar will help with monitoring and treatment. Familiar will always close the loop when communicating and also verbalise all actions performed.</p> <p>Trigger for previous step are further diagnostics. Trigger for next step is</p> <ul style="list-style-type: none"> • Complete diagnostic • Recognizing the ineffective therapy • Recognizing the need for supported ventilation • Time elapsed
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Notes: if clinical symptoms are precise and clear, a learning aim could be not to delay treatment with further (unnecessary diagnostic, especially in critical patients)

Simulator Set-Up, Steering – Step 3 (supported ventilation)

Vital Signs

Text for Patient

Management during scenario

<p>Eyes blinking slowly Airway clear Resp. Rate: 22/min Pulmo: crackles SpO2: 89% HR: 90/min ECG: Sinus rhythm (no ST-elevation) BP: 75/50 mmHg CO2: 62 cm H2O Temp: 36,1 °C Glycaemia: 150mg/dl</p> <p>Effects of pharmacologic therapy as described above.</p> <p>Effect of sedation: Eyes closed Airway snoring</p> <p>NIMV: If patient is relaxed: > RR 16/min > SpO2 no more 97%</p> <p>If patient is anxious > RR 30/min > SpO2 no more 92%</p>	<p>The patient complains that dyspnoea is worsening. She is short of breath and answers only using three-word-sentences.</p> <p>If participants do not initiate NIMV (Non-invasive motion ventilation), she will become more and more anxious and deteriorates</p>	<p>Familiar will help with monitoring and treatment. Familiar will always close the loop when communicating and also verbalise all actions performed.</p> <p>Be prepared for the team to sedate the patient.</p> <p>Familiar will (strongly) suggest to explain NIMV to the patient if not done by participants</p> <p>Trigger for next step is time delay (→ optionally!), when no NIMV is initiated...</p> <p>Else finish with handover...</p>
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Simulator Set-Up, Steering – Step 4 (controlled ventilation)

Vital Signs	Text for Patient	Management during scenario
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<p>Before general anesthesia: conditions as described above</p> <p>After general anesthesia (induction/intubation): Eyes closed Airway secured RR: according to settings Resp. Rate: according to ventilator etCO₂: according to ventilation Capnography waveform: normal Pulmo: crackles both sides SpO₂: max. 97% HR: 90/min ECG: Sinus rhythm (no ST-elevation) BP: 75/50 mmHg CO₂: 62 cm H₂O Temp: 36,1 °C Glycaemia: 150mg/dl</p> <p>Effects of pharmacologic therapy as described above.</p>	<p>The patient s breathless, speaks only single words</p> <p>She will remain somnolent until anaesthesia induction - if the participants explain the procedure, she will understand.</p> <p>After general anaesthesia no more reactions at all: Patient is sedated and ventilated</p>	<p>The participants need to recognize the critical state of the patient</p> <p>General anaesthesia / intubation should be performed → if no such decision is made: > deterioration, cyanosis > comments from familiar > faked phone call from familiar: order from consultant via phone > consultant (team member) enters rooms and performs induction</p> <p>Familiar will help with - monitoring and treatment. - orotracheal intubation - ventilator settings</p> <p>Trigger for next step is finish of induction (intubation)</p>
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Simulator Set-Up, Steering – Step 5 (transfer)

<p>Vital Signs</p>	<p>Text for Patient</p>	<p>Management during scenario</p>
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<p>Anaesthetized/sedated & ventilated: conditions as described above</p> <p>Effects of pharmacologic therapy as described above.</p>	<p>After general anaesthesia no more reactions at all: Patient is sedated and ventilated</p> <p>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)</p>	<p>Familiar will ask for the next step in therapy... (e.g. familiar suggests to transfer patient to...)</p> <ul style="list-style-type: none"> - intensive care: (for further treatment) --> "yes - they ask, what they should prepare?" - specific treatment for acute coronary syndrome: (e.g. heparin, antiaggregant drugs, etc.) --> simulated the administration of such as treatment - coronary arteriography: --> simulate the activation of the cath lab team. - cardiologist consultation: --> simulate the activation the cardiologist team - intra-aortic balloon pump: --> simulate the activation of team (cardiac surgery, cardiologist, depending on the centre)
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Notes: This scenario can be adapted to a medical student and nurse or only one of them.

If the participant asks for other specialists (thoracic surgeon, orthopaedist, general surgeon) they are busy and will arrive at the end of the scenario. Transfusion is not available in the ER.

learning target are **not**: placements of iv-lines, taking blood samples, intubation, performing a transthoracic echocardiography, intra-aortic balloon pump – but the participant should know the indication (and material needed)! Also the specific treatment of acute coronary syndrome is not a learning target

Simulation of invasive mechanical ventilation will be performed accordingly to each centre recourses. -It should be kept in mind that orotracheal intubation and IMV are **not** learning targets, just the indication!

Abstract

<p>Learning Target:</p>	<ul style="list-style-type: none"> - Diagnosis and (initial) treatment of cardiogenic shock.
<p>Description:</p>	<ul style="list-style-type: none"> - Signs and symptoms recognition - Basic monitoring - ABCED evaluation - Tension pneumothorax recognition and drainage - Limb fracture recognition and initial stabilization

	<ul style="list-style-type: none"> - Hypovolemic shock secondary to hepatic lesion, diagnostic and supportive treatment - Signs and symptoms recognition - ECG <10 minutes - Monitoring - Supportive treatment (for MAP>65mmHg, SatO2>90%) - Etiologic treatment
Participants:	Medical student 5 th or 6 th year or resident 1 st year and/or Nurse student 4 th year
Case Briefing:	A 77-y-old female with cardiogenic shock due to acute coronary syndrome is brought into the emergency department by her son/daughter. Past medical history of hypertension, diabetes, hyperlipidemia, obesity and tobacco smoking
List of Material:	<ul style="list-style-type: none"> - Basic monitoring and ER-standard equipment - Syringes and infusion pumps - X-ray, echo images (film) - Basic cardiovascular drugs - drugs and equipment for sedation/anaesthesia induction & ventilator (NIMV and controlled ventilation) - POC, blood sample results
Set-Up Room	<ul style="list-style-type: none"> - Emergency room - Manikin on bed
Set-Up Simulator:	-Manikin with vital signs remote control, possibility of cardiac and pulmonary auscultation, pulses palpation, orotracheal intubation
Scenario Saver:	Nurse assistant as familiar and Consultant of emergency medicine (team member)
Scenario End Criteria:	From control room and with familiar. Possibility of communication with familiar (walkie talkie)
Management during Scenario:	From control room and with familiar. Possibility of communication with familiar (walkie talkie)
Other:	

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Emergencies in pregnancy Hospital Clinic Barcelona (HUBc)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	73
<i>Scenario Briefing</i>	74
<i>Script SIM Nurse/Co-Instructor</i>	74
<i>Scenario Saver</i>	75
<i>Scenario End Criteria</i>	76
<i>Simulator Set-Up, Steering</i>	77
<i>Abstract</i>	78

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none"> • Patient evaluation (ABCDE) and monitoring (both mother and foetus) • Differential diagnosis of seizures during pregnancy • Eclampsia management (vital support and specific treatment) <p>CRM:</p> <ul style="list-style-type: none"> • 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-asses) • Share the mental model and gather team feedback • Organise team • Distribution of roles • Distribution of tasks 	<p>Where: Emergency room of a tertiary care</p> <p>Frame conditions:</p> <ul style="list-style-type: none"> • Monitoring, blood tests, US, cardiotocographic monitoring • Possibility of transfer to other hospital facilities (OR for example) 	<ul style="list-style-type: none"> • Medical student 5th or 6th year or resident 1st year • Nurse student 4th year • Midwife 1st year
<p>Notes: This scenario can be performed either by the whole team as participant (Medical and nurse/midwife role) or one participant (medical or nurse role) and an actor. Learning targets could be different for nursing, midwife and medical students, ie: medical management only for medical students</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>A 38 years-old, 32w pregnant woman is brought to ER after presenting generalized seizures. At her arrival she is obtunded, barely responding short orders with her eyes closed. When she is monitored: BP 160/100 mmHg, HR 110, satO2 96.</p> <p>She had had a normal pregnancy without any complications.</p>	<p>Medical student or resident: You are working in the emergency department. You are asked to assess a patient with a complaint of severe headache. You will work with a colleague nurse.</p> <p>Nurse/Midwife student: You are working in the emergency department. A patient with a complaint of severe headache 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</p>	<p>Patient: You are obtunded, in a postictal seizures state. Eyes closed, opened to an order. After a while you complain about headache and dizziness. You had a previous pregnancy without incident</p> <p>Next of kin: You explain that she had complained about a strong headache during the morning. She just fainted and started to convulse during 5 minutes. You called for help. You are very nervous and worried about your wife and baby.</p> <p>Emergency doctor: You are a general practitioner on duty with scarce experience in obstetrics emergencies. You are attending a patient in another box and available if the participant asks for help.</p> <p>Nurse assistant: You are an ER nurse. You monitor the patient at her arrival. You suggest for additional exams if the participant do not request them</p>

Notes: This scenario briefing is for 2 students (medical 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). A second medical student can be added, either from the beginning of the case or as help to the first student

If the only participant is a nurse student, the senior emergency doctor will remain in the scenario from the beginning. A second nurse student can be added, either from the beginning of the case or as help to the first student

Script SIM Nurse/Co-Instructor

List of Material

- Patient monitor (ex Tablet)
- Monitoring app (ex: SimMon)
- Simulated belly
- Monitoring: EKG leads, pulse oximeter, non-invasive blood pressure cuff, temperature probe
- Nasal prongs and venturi mask
- Face mask
- Equipment for peripheral intravenous cannulation: skin cleansing material, gauzes, tourniquet, intravenous cannula, line, bag
- Anticonvulsant medication: magnesium sulphate, diazepam
- Other medication
- Cardiotocograph probe
- Ultrasound probe
- Pre-recorded foetus cardiac activity and US video.
- Device to reproduce foetus cardiac activity and US video
- Crash cart

Set-Up Room

- When the participants arrive, the patient is in the room with the nurse assistant (confederate). They are briefed by the emergency doctor at the door, (confederate).

The patient:

- Spontaneous ventilation in air room
- Not monitored
- Has not a peripheral intravenous line

In the room:

- Crash cart
- Ultrasound machine
- Cardiotocograph

Set-Up Simulator

Hybrid simulator (actor with a simulated belly)
Patient monitor with a tablet and APP (ex: SimMon)

Notes:

How to react if the medical problem is not identified

If the participant/s are not able to reach a diagnosis or if they reach a diagnosis but they don't treat the patient accordingly, the senior emergency doctor (confederate) will enter the scenario and will guide the participant through all the steps for the resolution of the case.

How to react if the medical problem is identified too quickly

When the scenario is solved, regardless of the timing, the senior emergency doctor (confederate) will enter the scenario and the participants will resume the case. If something relevant is missing the confederates will point it out (ex: call the ICU...)
He can also suggest a differential diagnosis for seizures in a pregnant woman.

Other comments, material needed for savers (e.g. white coat)

If the participants are starting a treatment or doing an action that might be harmful for the patient, the emergency doctor will enter the scenario to reconduct the situation.

Notes:

Scenario End Criteria

Scenario ends when...

- It ends when the following statements are true:
- The diagnosis of eclampsia/preeclampsia is reached
- Support treatment is started
- Specific treatment is started
- Verbalizes what is the next step after adequate management for the critical situation has been made
- Then the emergency doctor (confederate) will enter the scenario, they will ask the participants a briefing of the situation. Afterwards the scenario ends.
- These can be achieved by the participants on their own or with help of the scenario saver

Timing

The scenario is planned to last 15 minutes.
Instructors could help if the previous points have not been achieved within the stipulated time.

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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2 BP stabilises
Vitals	HR:110/min BP: 160/100mmHG SpO2 96% in room air, 98% with oxygen	As before BP lowered according to local guidelines and standards

	RR: 20/min Temp:36,5°C EKG: sinus rhythm, no abnormalities	
Text for patient	She is obtunded, barely responding short answers and with her eyes closed. Progressively, she becomes more awake and reactive to orders. She complains of headache and dizziness. She does not remember about what has happened. She asks how the baby is and what has happened.	Both the patient and the next of kin understand the situation when it is explained. They ask if it is absolutely necessary to end the pregnancy.
Other info		
Expected Management during scenario	ABCDE evaluation. anamnesis (next of kin and patient) Physical examination to the patient Monitoring Oxygen iv-line	Identify the critical situation (differential diagnosis of the convulsions). - Initiate anticonvulsant and antihypertensive treatment. Consult with OB/GYN about further procedure - Explain everything to the patient and companion.

Notes: How to perform obstetric ultrasound will not be a learning target

Abstract

Learning Target:	Diagnosis and treatment of a patient with preeclampsia/eclampsia
Description:	Signs and symptoms recognition -Basic monitoring -Supportive treatment of eclampsia/preeclampsia -Definitive treatment of eclampsia/preeclampsia

Participants:	Medical student 5 th or 6 th year or resident 1 st year and/or Nurse student 4 th year and/or midwife 1 st year
Case Briefing:	A 38 year-old 32w pregnant woman with preeclampsia/eclampsia in is the ER
List of Material:	-Basic monitoring -Simulated belly -Medication:, anticonvulsant , antihypertensive, others -Cardiotocograph, US probe, pre-recorded fetus cardiac activity/US video
Set-Up Room	-Emergency room -Hybrid simulator on bed
Set-Up Simulator:	Hybrid simulator (actor with a simulated belly) Vital signs remote control (Tablet and APP, ex: SimMon)
Scenario Saver:	Emergency nurse can guide the participants during the scenario Emergency doctor
Scenario End Criteria:	From control room and with confederates. Possibility of communication with confederate (walkie talkie)
Management during Scenario:	
Other:	Limitations <ul style="list-style-type: none"> - Intravenous cannulation - Real time performance of fetus cardiac activity and US Gynaecological examination

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<i>Scenario Description</i>	83
<i>Scenario Briefing</i>	84
<i>Script SIM Nurse/Co-Instructor</i>	84
<i>Scenario Saver</i>	85
<i>Scenario End Criteria</i>	86
<i>Simulator Set-Up, Steering, part 1</i>	87
<i>Simulator Set-Up, Steering, part 2</i>	88
<i>Abstract</i>	89

Scenario Description

Learning Target	Description	Participants
<p>Medical: Diagnosis, management and treatment of a patient with a first time generalized tonic-clonic seizure which evolves to status epilepticus of a patient</p> <p>CRM:</p> <ul style="list-style-type: none"> • 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 	<p>Where: Emergency department</p> <p>Who: Patient with first generalized tonic-clonic seizure</p> <p>Frame conditions: none specific</p>	<p>Medical students 5th or 6th year or - Residents 1st year - Nurse students 4th year</p> <p>Emergency physician as briefer and backup rescue</p> <p>Nurse assistant as confederate</p> <p>Actor as fitting patient if SP</p>
<p>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). Either the simulator can fit or alternatively one person (participant?) acts as fitting patient.</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>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.</p> <p>Medication: enalapril, ipratropium bromide and atorvastatin</p> <p>He has a past medical history of smoking, hypertension, chronic obstructive pulmonary disease and dyslipidaemia.</p>	<p>You are the first health care professional in contact with the patient.</p> <p>Examine him, try to find a diagnosis, and make a therapy decision.</p> <p>You will get help, when you call for it.</p>	<p>Nurse assistant:</p> <p>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 participants and to guide them with material and medication location.</p> <p>You can guide with questions (hidden hints).</p> <p>If the hints are ignored, help with more direct comments: "Last time I saw that, the team did..." (only correct hints!).</p> <p>And finally, after a faked phone call: "The consultant is coming. He told us to do..."</p>

Notes: This scenario briefing is designed for 1 or more students (medical or 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). A second medical student can be added, either from the beginning of the case or as help to the first student

Script SIM Nurse/Co-Instructor

List of Material

Set-Up Room

Set-Up Simulator

<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • standard ER-room with monitoring, equipment, stretcher • the simulator/patient is lying on a stretcher <p>outside the room (ready only on request):</p> <ul style="list-style-type: none"> • defibrillator • 12-lead ecg • lab-results • patients medication plan 	<ul style="list-style-type: none"> • 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
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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)

Scenario Saver

<p>How to react if the medical problem is not identified</p>	<p>How to react if the medical problem is identified too quickly</p>	<p>Other comments, material needed for savers (e.g. white coat)</p>
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<p>If the participant/s are not able to reach a diagnosis or if they reach a diagnosis but they don't treat the patient accordingly, the confederate can give hints and guide the participant through all the steps for the resolution of the case. The patient will not die.</p> <p>The confederate can guide with questions (hidden hints): "What does mean?" "Is it also possible to do ... ?"</p> <p>If the hints are ignored, help is also possible with more direct comments: "Last time I saw that, the team did..." (only correct hints!)</p> <p>And finally, the confederate can fake a phone call to the consultant and say afterwards: "The consultant is coming. He told us to do..."</p>	<p>The response of the patient/simulator to the therapy may vary.</p> <p>If the team really is too fast, more drugs / alternative drugs are needed to succeed.</p> <p>But a good performance should not be slowed down unnecessarily!</p>	<p>If the participants are starting a treatment or doing an action that might be harmful for the patient, the confederate will give hints.</p> <p>In worst case a team member in the role of the consultant emergency medicine will enter the scenario to reconduct the situation.</p> <p>A radio connection between the team and the confederate should exist to direct the learners via the confederate in the favoured direction.</p>
---	---	--

Notes:

Scenario End Criteria

Scenario ends when...	Timing	Expected (key) actions
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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

- 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
- oxygenation/ventilation, (general anaesthesia / intubation)
- 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”

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	Eyes closed Patient/simulator is shaking Airway partial closed (snoring) Resp. Rate: 10/min	Eyes slow blinking Airway open Resp. Rate: 15/min SpO2: 95% (98% with O2) HR: 90/min BP: 180/110 mmHg

	BP: 180/110 mmHg Temp: 36,1 °C Glycaemia: 150mg/dl	SpO2: 92% (95% with O2) HR: 100/min BP: 180/110 mmHg (CO2: 60 cm H2O)	(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 shaken externally	
Management during scenario		seizure will stop when <ul style="list-style-type: none"> • 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, 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	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)

	(CO2: 60 cm H2O) Temp: 36,1 °C Glycaemia: 150mg/dl	
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 shaken externally	
Management during scenario	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Patients respiratory status deteriorates with/without oxygenation • Only ventilation improves oxygenation • General anaesthesia / intubation is possible, when asked for <p>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)</p>

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

Abstract

Learning Target:	Diagnosis and treatment of a patient with a first time generalized tonic-clonic seizure which evolves to status epilepticus seizure
Description:	<ul style="list-style-type: none"> • Signs and symptoms recognition • Basic monitoring • Pharmacological treatment of generalized tonic-clonic seizure and status epilepticus seizure
Participants:	Medical student 5 th or 6 th year or resident 1 st year and/or Nurse student 4 th 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:	<ul style="list-style-type: none"> • Standard ER-Setting • clothes (wig?) for a 70 yo male

	<ul style="list-style-type: none"> • 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:	<ul style="list-style-type: none"> • management of status epilepticus seizure with success • proper 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

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SIMULATION APPROACH FOR
EDUCATION AND TRAINING
IN EMERGENCY

Polytrauma Hospital Clinic Barcelona (HUBc)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	94
<i>Scenario Briefing</i>	95
<i>Script SIM Nurse/Co-Instructor</i>	96
<i>Scenario Saver</i>	97
<i>Scenario End Criteria</i>	98
<i>Simulator Set-Up, Steering Part 1</i>	99
<i>Simulator Set-Up, Steering Part 2</i>	100
<i>Abstract</i>	101

Scenario Description

Learning Target	Description	Participants
<p>Leadership:</p> <ul style="list-style-type: none"> • Patient evaluation (ABCDE) and monitoring <p>Medical:</p> <ul style="list-style-type: none"> • Diagnosis and treatment of a pneumothorax in a polytrauma setting • Diagnosis and treatment of a severe haemorrhage in a polytrauma setting <p>CRM:</p> <ul style="list-style-type: none"> • Knowing the environment and resources available • Anticipate and plan • Call for help • Use the 3Cs to communicate (citing names, clear instructions, close the loop) • Situation awareness (be aware of the initial situation and re-asses,) • Share the mental model and gather team feedback • Organise team <ul style="list-style-type: none"> > Distribution of roles > Distribution of tasks 	<p>Where:</p> <ul style="list-style-type: none"> • Rural Hospital, Emergency department <p>Frame conditions:</p> <ul style="list-style-type: none"> • Resuscitation room / trauma bay • Laboratory tests, X-ray and echography available • No access to transfusion • OR, CT-scan or MRI are available and have to be organized 	<p>Medical students 5th or 6th year or Residents 1st year Nurse students 4th year</p> <p>Emergency physician as briefer and backup rescue</p> <p>Nurse assistant as confederate</p>
<p>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).</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>You are working in a rural hospital.</p> <p>A 21 -year-old male is brought by a taxi to a rural hospital after he had fallen while driving an electrical scooter at high speed</p> <p>no relevant past medical history</p> <p>no medications</p> <p>no operations</p> <p>no known allergies</p>	<p>Medical student or resident: You are the first health care professional in contact with the patient. Assess the patient, try to find a diagnosis, and make a therapy decision. You will work with a colleague nurse.</p> <p>Nurse student: A patient that has had a high speed accident while driving an electrical scooter 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.</p>	<p>Nurse assistant: You are a nurse assistant in the emergency department. You will be in the room when the participant(s) arrive, help the participants with material and medication location.</p> <p>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..."</p> <p>Emergency physician: Team member to support with thoracic drainage</p> <p>Ambulance team: Optional. They transfer the patient to a another hospital.</p>

Notes: This scenario briefing is for 2 students (medical and nurse). A second medical student can be added, either from the beginning of the case or as help to the first student

-If the only participant is a nurse student, the senior emergency doctor will remain in the scenario from the beginning. A second nurse student can be added, either from the beginning of the case or as help to the first student.

Script SIM Nurse/Co-Instructor

List of Material

- Pleural drainage phantom
- standard ER-room with monitoring, defibrillator, equipment, stretcher
- Limb fracture stabilization material
- Material for pneumothorax drainage
- prepared lab-/POC-results: full blood count, glucose, e'lytes, urea, creatinine, liver function, creatinine-kinase, lactate, arterial blood gas
- prepared 12-lead-ecg
- Echo pre-recorded videos thorax: pneumothorax
abdomen: perihepatic fluid.
- Chest X-ray with low rib fractures and pneumothorax
X-ray with wrist fracture
X-ray pelvis normal
X-ray with thoracic drainage

Set-Up Room

- standard ER-room with monitoring, equipment, stretcher
- the simulator/patient is lying on a stretcher
- Ultrasound machine available
- outside the room
(ready only on request):
 - 12-lead ecg
 - lab-results
 - x-rays
 - echo-videos

Set-Up Simulator

- Hybrid patient with pleural drainage phantom
If an actor is not available, a computerized mannequin (voice required) can be used
- Patient with daily clothes on a stretcher emphasizing the age of the patient (45 yo male)
- right arm deformity (ideal photo)
- when the scenario starts, the patient is not monitored, has neither an i.v. line nor oxygen

Notes: x-ray machine available? (if unavaible send participants out of the room)

- real time ultrasound / echography (if not available use any item as receiving transducer, US made by confederate and show video on an tablet computer)

Scenario Saver

How to react if the medical problem is not identified

If the participants are not able to reach a diagnosis or if they reach a diagnosis but they don't treat the patient accordingly, 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..."

If the participant is not able to place a thoracic drainage the emergency physician will support and leave afterwards

How to react if the medical problem is identified too quickly

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!

Other comments, material needed for savers (e.g. white coat)

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:

Scenario End Criteria

Scenario ends when...

all of the following statements are true:

- The diagnosis and treatment of tension pneumothorax
- Limb fracture stabilised
- Diagnosis of abdominal trauma with active bleeding is made and therapy according to local guidelines is initiated
- Emergency transfer to a tertiary hospital for definitive treatment is suggested

These can be achieved by the participants on their own or with help of the scenario saver

Then the emergency doctor (confederate) will enter the scenario and ask the participants for a handover

Timing

- 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 via the confederate.

Expected (key) actions

- Release of tension pneumothorax
- recognition of abdominal bleeding
- intubation
- 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”

Simulator Set-Up, Steering Part 1

	Phase 1 Start, ABCDE	Phase 2 Tension pneumothorax	Phase 3 Secondary survey
Vitals	Eyes blinking Airway clear Resp. Rate: 18/min SpO ₂ : 95% (98% with O ₂) HR: 100/min ECG: Sinus rhythm BP: 110/60 mmHg (CO ₂ : 30 cm H ₂ O) Temp: 35,5°C Glycaemia: 150mg/dl	Eyes blinking Airway clear Resp. Rate: 30/min SpO ₂ : falling to 93% with O ₂) HR: 140/min BP: 80/40 mmHg (CO ₂ : 62 cm H ₂ O)	Eyes blinking slowly Airway clear Resp. Rate: 18/min SpO ₂ : 99% (with high-flow O ₂) HR: 106/min ECG: Sinus tachycardia BP: 100/80 (CO ₂ : 42 cm H ₂ O)
Text for patient	Patient is complaining of pain everywhere and specially in his right arm. If patient is asked, he is capable of recalling the accident, he was driving his electrical scooter at high speed when a pedestrian appeared out of nowhere. Trying to avoid him, he fell on his right side and he hit the kerb of the boardwalk.	Patient deteriorates and is almost not able to breath: His sentences are shorts (three-word-sentences) Patient expresses that he doesn't feel well, he feels dizzy, and he gets more and more anxious.	Patient expresses that it is much better now, BUT he starts complaining about pain in his right arm only if asked: The patient mentions also abdominal pain in right upper abdomen (right hypochondrium)
Other info		- no chest expansions R - absent breath sounds right hemithorax	
Management during scenario	<u>Blood gas analysis</u> arterial, 37,0°C pO ₂ 105 mmHg (70-100) pCO ₂ 32.5 mmHg (35-45) HCO ₃ 23.1 mmol/L (22-28) pH 7.34 (7.35-7.45) BE -2.8 mmol/L (-3-3) Lactate 1.4 mmol/L (1.0-1.5) Hb 12.5 g/dl (12-17) * HCO ₃ ⁻ = Bicarbonate BE = Base Excess	<u>Blood gas analysis</u> arterial, 37,0°C pO ₂ 114 mmHg (70-100) pCO ₂ 62,3 mmHg (35-45) HCO ₃ 18,2 mmol/L (22-28) pH 7.19 (7.35-7.45) BE -8.8 mmol/L (-3-3) Lactate 4,2 mmol/L (1.0-1.5) Hb 11.5 g/dl (12-17) * HCO ₃ ⁻ = Bicarbonate BE = Base Excess Learning goal: no delay in treatment Possible support for TxD	secondary survey • deformity of fractured right, extreme pain when reposition-attempt is made • no neurovascular injury • If asked for x-ray: wrist is fractured pelvis is normal (CT-Scan/MRI is available on another floor – pretty long transport)

Simulator Set-Up, Steering Part 2

	Phase 4 Abdominal bleeding	Phase 5 Transport
Vitals	Eyes blinking slowly Airway clear Resp. Rate: 21/min SpO2: 99% (with high-flow O2) HR: 110/min ECG: Sinus tachycardia BP: 90/70 mmHg CO2: 42 cm H2O Temp: 36,1 °C Glycaemia: 150mg/dl	Eyes closed Airway clear Resp. Rate: 14/min SpO2: 95% with high-flow O2 HR: 120/min ECG: Sinus tachycardia BP: 80/60 mmHg CO2: 34 cm H2O
Text for patient	Patient deteriorates: (the speech becomes slow, it takes time to find the words) Patient mentions that he doesn't feel well in another way, he feels getting tired and weak The patient complains of increasing abdominal pain in right upper abdomen (right hypochondrium)	Patient either - becomes stuporous (GCS 8) or - is intubated
Other info	Abdominal guarding and tenderness in right upper abdomen • abdominal echography, pre-recorded video will show perihepatic fluid • fluid therapy with minimal partial improvement • Transfusion is not available	The participants need to recognize - the critical state of the patient and the need for final control of the bleeding -> surgery General anaesthesia / intubation should be performed
Management during scenario	<u>Blood gas analysis</u> arterial, 37,0°C pO ₂ 152 mmHg (70-100) pCO ₂ 39,9 mmHg (35-45) HCO ₃ 16,3 mmol/L (22-28) pH 7.28 (7.35-7.45) BE -8.8 mmol/L (-3-3) Lactate 5,6 mmol/L (1.0-1.5) Hb 10.5 g/dl (12-17) * HCO ₃ ⁻ = Bicarbonate BE = Base Excess	<u>Blood gas analysis (INTUBATED)</u> arterial, 37,0°C pO ₂ 334 mmHg (70-100) pCO ₂ 36,5 mmHg (35-45) HCO ₃ 6,6 mmol/L (22-28) pH 7.13 (7.35-7.45) BE -10,3 mmol/L (-3-3) Lactate 5,7 mmol/L (1.0-1.5) Hb 9,9 g/dl (12-17) * HCO ₃ ⁻ = Bicarbonate BE = Base Excess

Notes: If the participant asks for other specialists (thoracic surgeon, orthopaedist, general surgeon) they are busy and will arrive at the end of the scenario. Transfusion is not available in the ER.

Not learning target are: placements of iv-lines, taking blood samples, intubation, FAST-echo (but the participant should be able to interpret the images). Thoracic drainage technique might be a learning target, or not - but the participant should know material needed and indication!

Abstract

Learning Target:	Diagnostic and initial treatment of a polytrauma patient in rural/minor hospital
Description:	<ul style="list-style-type: none"> - Signs and symptoms recognition - Basic monitoring - ABCED evaluation - Tension pneumothorax recognition and drainage - Limb fracture recognition and initial stabilization - Hypovolemic shock secondary to splenic or hepatic lesion, diagnostic and supportive treatment
Participants:	Medical student 5 th or 6 th year or resident 1 st year and/or Nurse student 4 th year
Case Briefing:	<p>A 45 year-old male is brought by a taxi to a rural hospital after he had fallen while driving an electrical scooter at high speed</p> <p>no relevant past medical history no medications no operations no known allergies</p>
List of Material:	<ul style="list-style-type: none"> - Basic monitoring - Oxygen treatment and intubation material - Venous lines - Medication: local anaesthetic, vasopressors, morphine - Syringes and infusion pumps - X-ray, echo images - Thoracic drainage phantom
Set-Up Room	<ul style="list-style-type: none"> - Emergency room - Hybrid simulator (Thoracic drainage phantom)
Set-Up Simulator:	Hybrid actor w -vital signs remote control (Tablet and APP, e.g.: SimMon)
Scenario Saver:	Nurse assistant as confederate and emergency Physician (team member)
Scenario End Criteria:	From control room and with confederates. Possibility of communication with confederate (walkie talkie)
Management during Scenario:	Limitations: Intravenous cannulation & real time performing echography, x-ray
Other:	Diagnostic and initial treatment of a polytrauma patient in a rural hospital

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Childbirth

Ludwig-Maximilians-University (LMU)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	6
<i>Scenario Saver</i>	7
<i>Scenario End Criteria</i>	8
<i>Simulator Set-Up, Steering</i>	9
<i>Abstract</i>	10

Scenario Description

Learning Target	Description	Participants
<p>Medical: Management of a normal birth process</p> <p>CRM:</p> <ul style="list-style-type: none">• Leadership• Decision making	<p>Where: Emergency department</p> <p>Frame conditions: Day shift in the ED, all resources available</p>	<p>Students</p> <p>Who: 1-2 doctors 1 nurse</p>
<p>Notes: should be used as a hybrid with an actor. Actor needs to be either midwife or very well briefed!</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>36 yr old, IIIG IIIP, other two birth spontaneous, no complications. Healthy woman, no antecedents, normal pregnancy. Started from home with contractions every 3-4 minutes, midwife told her to come quickly to hospital. Just before entering ED amniotic fluid came out. Currently midwives bound in delivery room</p>		<p>If actor – normal birth, don't overact the pain/screaming, listen to advice.</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- normal ED cart
- Birthing simulator (eg Noelle, SimMum)

OR

- SP with MamaNatalie
- Newborn simple puppet

Set-Up Room

- ED stretcher with sim or empty stretcher
- actor walks in

Set-Up Simulator

- actor dressed, with MamaNatalie
- wet from amniotic fluid
- previous documents at hand, bag packed for hospital stay

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)
Problem is obvious	Development of birth cannot be influenced	Midwife can be sent to take over

Notes:

Scenario End Criteria

Scenario ends when...		
<ul style="list-style-type: none">• Child is born and tended to• Placenta is extracted		

Notes: Normal birth – child should be given to mother, umbilical cord cut.
General note – end the scenario saying:
“The patient is now going to be taken care of, thank you for solving the case”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2	Phase 3 Child born	
Vitals	HR: 90 /min SR. BP: 130/ 85 mmHg SpO2: 98%, RR: 15 /min GCS: 15 Contractions every 3 minutes CTG normal	HR: 100 /min SR. BP: 140/ 95 mmHg SpO2: 98%, RR: 15 /min GCS: 15 Contractions every minute CTG normal	HR: 80 /min. BP: 120/60 SpO2: 99% RR: 28 /min GCS: 15 No contractions No CTG	
Text for patient	Excited, slightly worried	Pain at contractions		
Other info	If actor – normal birth, don't overact the pain/screaming, listen to advice.			
Management during scenario			Think about placenta	

Notes:

Abstract

Learning Target:	Management of CHILD BIRTH
Description:	Normal childbirth, no complications
Participants:	1-2 doctors 1 nurse
Case Briefing:	36 yr old, IIIG IIIP, other two birth spontaneous, no complications. Healthy woman, no antecedents, normal pregnancy. Started from home with contractions every 3-4 minutes, midwife told her to come quickly to hospital. Just before entering ED amniotic fluid came out. Currently midwives bound in delivery room
List of Material:	Normal ED cart Birthing simulator (eg Noelle, SimMum) OR SP with MamaNatalie Newborn simple puppet
Set-Up Room	ED stretcher with sim or empty stretcher, actor walks in
Set-Up Simulator:	actor dressed, with MamaNatalie wet from amniotic fluid previous documents at hand, bag packed for hospital stay
Scenario Saver:	midwife can be sent in to take over
Scenario End Criteria:	Child is born Placenta is extracted
Management during Scenario:	If actor – normal birth, don't overact the pain/screaming, listen to advice.
Other:	

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Intracranial Bleeding (ICB) Ludwig-Maximilians-University (LMU)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	6
<i>Scenario Saver</i>	7
<i>Scenario End Criteria</i>	8
<i>Simulator Set-Up, Steering</i>	9
<i>Abstract</i>	10

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Symptoms of an ICB• Treatment of complications• maybe neurological exam (if actor) <p>CRM:</p> <ul style="list-style-type: none">• SA• Leadership• Communication	<p>Where: Emergency department</p> <p>Frame conditions: Day shift, all resources available</p>	<ul style="list-style-type: none">• 2 doctors• 1 nurse
<p>Notes: can be used as a hybrid with an actor</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Mr. Jones has been brought in by the ambulance. During the morning, he had developed a headache and a left hemiparesis. Brain CT has revealed an ICB, located in the right basal ganglia. His condition is stable, he has a GCS of 13.</p> <p>He is tired, but able to communicate and oriented.</p> <p>You are waiting for a transfer to the Stroke Unit.</p>	<p>SP:</p> <p>You are an 75 yr old man, living alone (your wife died of cancer 10 years ago).</p> <p>Your neighbour, whom ou visited in the morning, alerted the ambulance. You are scared and a bit disoriented.</p> <p>You are feeling very tired.</p>	<p>If actor – a bit disoriented, but able to communicate. Left arm and leg are weak, but not completely paralyzed.</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Normal ED cart
- Adult simulator or SP

Set-Up Room

- emergency department with sim
- maybe actor

Set-Up Simulator

- Dressed
- Iv line
- O2 mask

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)
Patient will stabilize and exhibit shallow breathing.	Airway can be a bit tricky	

Notes:

Scenario End Criteria

Scenario ends when...

- Airway is secured and patient is ventilated

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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2 Resp. arrest	Phase 3 Intubation	Phase 4 stabilisation
Vitals	HR: 80 bpm, SR BP: 180/110 mmHg; SpO2: 97 %, Resp. Rate: 14, Temp: 36,9°C; GCS 13 Pupils: isocoric, light reaction is normal	HR: 45 /min. BP: 180/95, SpO2: decreasing over 1 min to 75% RR: apnea	HR: 70 /min. BP: 140/80 SpO2: 95% RR: ventilated PaCO2: 65 mmHg;	HR: 70 /min. BP: 140/80 SpO2: 99% RR: ventilated PaCO2: 36 mmHg;
Text for patient	Tired, knows who he is Moaning	Silence		
Other info				
Management during scenario		Change to sim if started with actor		

Notes:

Abstract

Learning Target:	Relatively straightforward ICB, management of acute respirators complications
Description:	- 2 doctors - 1 nurse All students
Participants:	Mr. Jones has been brought in by the ambulance. During the morning he developed a headache and a left hemiparesis. Brain CT has revealed an ICB, located in the right basal ganglia. His condition is stable, he has a GCS of 13, He is tired, but able to communicate and oriented. You are waiting for a transfer to the Stroke Unit
Case Briefing:	Normal ED cart - Adult simulator OR - SP
List of Material:	- ED stretcher with sim - maybe actor
Set-Up Room	- dressed - iv line - O2 mask
Set-Up Simulator:	Patient will stabilize and exhibit shallow breathing
Scenario Saver:	Airway secured, patient ventilated
Scenario End Criteria:	Change to sim needed if start with actor
Management during Scenario:	Relatively straightforward ICB, management of acute respirators complications
Other:	

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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	6
<i>Scenario Saver</i>	7
<i>Scenario End Criteria</i>	8
<i>Simulator Set-Up, Steering</i>	9
<i>Abstract</i>	10

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Recognizing dyspnea• Primary care of a dyspneic infant• adequate mask ventilation <p>CRM:</p> <ul style="list-style-type: none">• SA• Dealing with missing experienced Teamleader• Communication	<p>Where: Emergency department</p> <p>Frame conditions: Day shift No experienced teamleader available on site</p>	<p>students</p> <p>Who:</p> <ul style="list-style-type: none">• 2 doctors• 1-2 nurses
<p>Notes: Needs an actor for the role of the mother, can be a student Depending on available options and resources, experienced teamleader can be summoned via telemedical devices</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>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”</p>		<p>Mother – very worried, but can be calmed down. Don’t interfere too much with medical team.</p>

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

Script SIM Nurse/Co-Instructor

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
- Iv line
- O2 through nose

Notes:

Scenario Saver

How to react if the medical problem is not identified

Send in senior doctor

How to react if the medical problem is identified too quickly

Mother can be a bit more stressful, binding resources

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...
<ul style="list-style-type: none">• 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”

Simulator Set-Up, Steering

	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				

Abstract

Learning Target:	Management of INFANT DYSPNEA SPECIAL situation – so 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 - iv line - O2 through nose
Scenario Saver:	No senior doctor available, if necessary, send in another colleague or nurse
Scenario End Criteria:	Patient ventilated, Volume given
Management during Scenario:	Retractions breathing Rhonchi over whole lung
Other:	

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Infant Dyspnea Ludwig-Maximilians-University (LMU)



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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	6
<i>Scenario Saver</i>	7
<i>Scenario End Criteria</i>	8
<i>Simulator Set-Up, Steering</i>	9
<i>Abstract</i>	10

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Recognizing dyspnea• Primary care of a dyspneic infant• adequate mask ventilation <p>CRM:</p> <ul style="list-style-type: none">• SA• Leadership• Communication	<p>Where: Emergency department</p> <p>Frame conditions: Day shift, all resources available</p>	<p>students</p> <p>Who:</p> <ul style="list-style-type: none">• 2 doctors• 1-2 nurses
<p>Notes: Needs an actor for the role of the mother, can be a student</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>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”</p>		<p>Mother – very worried, but can be calmed down. Don’t interfere too much with medical team.</p>

Notes:

Script SIM Nurse/Co-Instructor

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
- Iv line
- O2 through nose

Notes:

Scenario Saver

How to react if the medical problem is not identified

Send in senior doctor

How to react if the medical problem is identified too quickly

Mother can be a bit more stressful, binding resources

Other comments, material needed for savers (e.g. white coat)

Notes:

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”

Simulator Set-Up, Steering

	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:				

Abstract

Learning Target:	Management of INFANT DYSPNEA
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 - iv line - O2 through nose
Scenario Saver:	Send in senior doctor
Scenario End Criteria:	Patient ventilated, Volume given
Management during Scenario:	Retractions breathing Rhonchi over whole lung
Other:	

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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	6
<i>Scenario Saver</i>	7
<i>Scenario End Criteria</i>	8
<i>Simulator Set-Up, Steering</i>	9
<i>Abstract</i>	10

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Management of the burn patient <p>CRM:</p> <ul style="list-style-type: none">• Leadership• Decision Making• Communication• SA• Resource management in case of scarcity	<p>Where:</p> <p>Emergency department</p> <p>Frame conditions:</p> <p>Day shift in the ED, all resources available</p>	<p>Students</p> <p>Who:</p> <p>1-2 doctors 1-2 nurses</p>
<p>Notes: Actor can be accompanying person (friend). Also burnt, reveals it later Scenario is meant to deal with scarcity of resources – as the second patient reveals himself, another doctor or nurse is not available, the team needs to split</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>50-year-old male, tried to light a barbecue with petrol, burned his arms, chest, and face. Girlfriend came with him, is available for inquiry. Both slightly drunk</p>	<p>none</p>	<p>If actor – be helpful, yet a bit nervous. On inquiry show your palms with burns When scenario is ongoing (or on signal from instructors) reveal you are in pain, both your palms with burns – try to bind as many resources as possible without being obnoxious</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- normal ED cart
- make sure io is available
- adult patient simulator
AND (optional)SP

Set-Up Room

- ED stretcher with sim

Set-Up Simulator

Undressed, burn marks on chest,
arms jaw, no IV

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)
<p>Problem is obvious. If difficulty in taking decisions, help from senior</p> <p>This help could contain:</p> <ul style="list-style-type: none">• idea for io• support for analgesia <p>If resource scarcity is severe and overwhelming, maybe send in some colleagues</p>	<p>Respiratory distress Patient can be agitated, language barrier</p>	

Notes:

Scenario End Criteria

Scenario ends when...		
<ul style="list-style-type: none">• io access is established• analgesia• transfer to ICU• identification and treatment of second victim		

Notes: Main debriefing theme, along treatment of burns – resource 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”

Simulator Set-Up, Steering

	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	Girlfriend is helpful, also has some pain, but ignoring it			
Management during scenario	Pain should be bearable although hardly. Keep stress level manageable			

Notes:

Abstract

Learning Target:	Management of thermal injury
Description:	Burn patient, household accident
Participants:	Students. Roles: 1-2 doctors, 1-2 nurses
Case Briefing:	50-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 stretcher 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 is cared for
Management during Scenario:	Pain should be bearable although hardly. Keep stress level manageable Actor- ask insistently for help if not cared for
Other:	Keep contact with actor

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

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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	6
<i>Scenario Saver</i>	7
<i>Scenario End Criteria</i>	8
<i>Simulator Set-Up, Steering</i>	9
<i>Abstract</i>	10

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Management of the burn patient <p>CRM:</p> <ul style="list-style-type: none">• Leadership• Decision Making• Communication• SA	<p>Where:</p> <p>Emergency department</p> <p>Frame conditions:</p> <p>Day shift in the ED, all resources available</p>	<p>Students</p> <p>Who:</p> <p>1-2 doctors 1-2 nurses</p>
<p>Notes: Actor can be accompanying person (girlfriend). Could also have burns on the hands (SA!)</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>50-year-old male, tried to light a barbecue with petrol, burned his arms, chest, and face. Girlfriend came with him, is available for inquiry.</p>	<p>none</p>	<p>If actor – be helpful, yet a bit nervous. On inquiry show your palms with burns</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- normal ED cart
- make sure io is available
- adult patient simulator
AND (optional)SP

Set-Up Room

- ED stretcher with sim

Set-Up Simulator

Undressed, burn marks on chest,
arms jaw, no IV

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)
<p>Problem is obvious. If difficulty in taking decisions, help from senior This help could contain:</p> <ul style="list-style-type: none">• idea for io• support for analgesia	<p>Respiratory distress Patient can be agitated, language barrier</p>	

Notes:

Scenario End Criteria

Scenario ends when...		
<p>io access is established</p> <ul style="list-style-type: none">- analgesia- transfer to ICU- ideally identification of second victim		

Notes: Scenario should end even if second victim is not identified, address this in debriefing.

General note – end the scenario saying:

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

Simulator Set-Up, Steering

	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			
Other info	Girlfriend is helpful, also has some pain, but ignoring it			
Management during scenario	Pain should be bearable although hardly. Keep stress level manageable			

Notes:

Abstract

Learning Target:	Management of thermal injury
Description:	Burn patient, household accident
Participants:	Students. Roles: 1-2 doctors, 1-2 nurses
Case Briefing:	50-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 stretcher with Sim, make sure io is available
Set-Up Simulator:	- undressed, burn marks on chest, arms, jaw - no iv
Scenario Saver:	Senior colleague
Scenario End Criteria:	Analgesia, vascular access, follow-up plan
Management during Scenario:	Pain should be bearable although hardly. Keep stress level manageable
Other:	

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SIMULATION APPROACH FOR
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Traumatic Brain Injury (TBI) Ludwig-Maximilians-University (LMU)



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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	6
<i>Scenario Saver</i>	7
<i>Scenario End Criteria</i>	8
<i>Simulator Set-Up, Steering</i>	9
<i>Abstract</i>	10

Scenario Description

Learning Target	Description	Participants
<p>Medical: Management of a patient with suspected TBI (Traumatic Brain Injury)</p> <p>CRM:</p> <ul style="list-style-type: none">• Leadership• Decision Making• Communication	<p>Where: Emergency department</p> <p>Frame conditions: Day shift in the ED, all resources available</p>	<p>Students</p> <p>Who: 1-2 doctors 1-2 nurses</p>
<p>Notes: Actor can portray parent</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>5 yr old boy, playing in tree house, fell to the ground. Not witnessed, initial loss of consciousness unclear. In a panic, parents took him directly to the ED. He is awake, cephalgic and has vomited twice already in the car.</p>		<p>Parents – nervous, but helpful. Can be sent away</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
<ul style="list-style-type: none">• normal ED cart• pediatric simulator (eg Laerdal SimJunior, 5year Gaumard) AND (optional) SP	Emergency stretcher with sim	Normally dressed (playground), no IV, bruise on forehead

Notes:

Scenario Saver

How to react if the medical problem is not identified

Parent can say something along the lines that little Max is very quiet and strange.
If unclear how to manage – send senior in.

How to react if the medical problem is identified too quickly

Difficult to impossible iv; io is an option

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...

- stiffneck applied
- iv or io access is established
- anisocoria – intubation (depending on students level)

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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2 Deterioration	Phase 3 Intubation	
Vitals	HR: 120 bpm, SR BP: 100/70 mmHg; SpO2: 98 %, Resp. Rate: 24 Temp: 36,9°C; GCS 15 Pupils: anisocoric, light reaction is normal.	HR: 85 /min. BP: 150/95, SpO2: decreasing over 1-2 min to 87% RR: 12 GCS 9 (moaning, eyes closed, pain withdrawal)	HR: 70 /min. BP: 95/60 SpO2: 99% RR: ventilated	
Text for patient	Complain about headache	Moaning		
Other info	Parents worried, but controllable			
Management during scenario				

Notes:

Abstract

Learning Target:	Management of TBI
Description:	TBI in a child
Participants:	- 1-2 doctors - 1-2 nurses
Case Briefing:	5 yr old boy, playing in tree house, fell to the ground. Not witnessed, initial loss of consciousness unclear. In a panic, parents took him directly to the ED. He is awake, cephalgic and has vomited twice already in the car.
List of Material:	Normal ED cart
Set-Up Room	ED stretcher with sim - pediatric simulator (eg Laerdal SimJunior, 5year Gaumard) AND (optional) - SP
Set-Up Simulator:	- normally dressed (playground) - no iv - bruise on forehead
Scenario Saver:	- parent can say something along the lines that little Max is very quiet and strange - if unclear how to manage – send senior in-
Scenario End Criteria:	- stiffneck applied - iv or io access is established - anisocoria – intubation (depending on students level)
Management during Scenario:	Parents worried, but controllable
Other:	

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Cardiac arrest shockable rhythm - Infant Südtiroler Sanitätsbetrieb (SABES)



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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	5
<i>Scenario Saver</i>	6
<i>Scenario End Criteria</i>	7
<i>Simulator Set-Up, Steering</i>	8
<i>Abstract</i>	9

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Importance of connecting to the monitor if pulse absent, to identify the rhythm underlying the cardiac arrest• As soon as a shockable rhythm is recognized, proceed immediately to defibrillation• Quality CPR and early defibrillation• Use 4 J/kg as the standard energy dose for discharges. Do not exceed the suggested energy doses for adults (120-200 J, depending on defibrillator type)• Research and treatment of reversible causes of cardiac arrest.• Importance of pulse and other "C" signs assessment if resumption of an apparently sinus rhythm (compatible with perfusion) on monitor <p>CRM:</p> <ul style="list-style-type: none">• Equipment check• Closed-loop• communication• AMPLE• SBAR	<p>Where: Paediatric Day Hospital waiting room</p> <p>Frame conditions: Daytime, all resources available</p>	<p>Students</p> <p>Who: 1 doctor 2 nurses</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>A 7-year-old boy, known to have arrhythmogenic cardiomyopathy is followed by our pediatric cardiology department. While in the DH waiting room before an examination and echocardiography, he suddenly loses consciousness and falls to the ground.</p>	<p>Weight 25kg</p>	

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Vital Sign Monitor
- (ECG, Oxygen saturation, blood pressure cuff, Shiller)
- Aspirator
- Emergency trolley with:
- Simple O2 mask, mask with reservoir
- Self-expanding flask
- Oro-pharyngeal cannula
- Laryngeal mask (i-gel)
- Thermometer
- Material for venous access
- EZ-IO for intraosseous access
- EAB and blood and coagulation test tubes
- Adrenaline
- Saline
- Ringer's lactate
- Antibiotics
- Drugs

Set-Up Room

Phone available

Set-Up Simulator

- Actor dressed
- Paediatric simulator

Description of history and status in briefing

Notes: QUICK LOOK (B, B, B): motionless (U), not breathing, cyanotic.

Scenario Saver

Initial Conditions

**INITIAL VITAL
PARAMETERS**

ENVISAGED ACTIONS

	(only if monitor is connected)	
<p>Rating: A: at risk B: not breathing C: central wrists absent D: not responsive to pain ('U')</p>	<p>VITAL PARAMETERS (only if monitor is connected) AB: apnoea, SpO2 undetectable C: ventricular tachycardia</p>	<p>SSS-A-B: opening and maintaining airway, 5 rescue ventilations with balloon and mask and O2 100%. + call anaesthetist C: CPR, defibrillation (4 J/kg) - positioning vascular access - adrenaline and amiodarone according to EPALS sequence Admission to paediatric ICU</p>

Notes: Discharge at 4 J/kg (100 J) then resume CPR for 2 min (10 cycles). Every 2 minutes reassess rhythm on monitor.
After 3rd defibrillator discharge →
- adrenaline 0.1 ml/kg (diluted 1:10,000) = 2.5 ml (repeat every other cycle)
- amiodarone 5 mg/kg (= 2.5 ml pure) repeatable in alternate cycles max 2 times

Scenario End Criteria

1)EVOLUTION	2)EVOLUTION	Scenario ends when...
-------------	-------------	-----------------------

If defibrillation is timely and correct:
wait for drugs

If delayed or uncorrected defibrillation or other drugs or early intubation delaying CPR: continues CPR without a pulse (consider concluding the scenario, then discussion with learning conversation).

After the drugs (adrenaline and amiodarone) after the 3rd discharge. You finish the 2 minutes of CPR and at the reevaluation of rhythm → sinus rhythm

Notes:

Simulator Set-Up, Steering

	Initials	After defibrillation	After third defibrillation	After drugs
Vitals	RR 0/min, HR not detectable, SpO2 not detectable	HR not detectable	HR not detectable	HR 80/min
Text for patient				
Other info				

Management during scenario	Prepare for defibrillation and CPR	3 defibrillation and prepare for IO access	Preparation for drugs	stabilization
----------------------------	------------------------------------	--	-----------------------	---------------

Notes:

Abstract

Learning Target:	Identify the rhythm underlying the cardiac arrest
Description:	A 7-year-old boy with cardiac arrest
Participants:	Students: 1 doctor, 2 nurses
Case Briefing:	

List of Material:	Monitor, emergency trolley, defibrillator
Set-Up Room	Paediatric Day Hospital waiting room
Set-Up Simulator:	Paediatric simulator
Scenario Saver:	
Scenario End Criteria:	
Management during Scenario:	
Other:	

SAFETY

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SIMULATION APPROACH FOR
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IN EMERGENCY

Neonatal Resuscitation Südtiroler Sanitätsbetrieb (SABES)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	14
<i>Scenario Briefing</i>	15
<i>Script SIM Nurse/Co-Instructor</i>	15
<i>Scenario Saver</i>	16
<i>Scenario End Criteria</i>	17
<i>Simulator Set-Up, Steering</i>	18
<i>Abstract</i>	19

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Identify neonatal asphyxia• Follow neonatal resuscitation flow chart <p>CRM:</p> <ul style="list-style-type: none">• Equipment check• Closed-loop• communication• (I)SBAR	<p>Where: Delivery room</p> <p>Frame conditions: Daytime, all resources available</p>	<p>Students</p> <p>Who: 1 doctor 2 nurses</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>First born at term. Uneventful pregnancy . Caesarean section performed for fetal bradycardia. Meconium stained amniotic fluid.</p>		

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Vital Sign Monitor
- (ECG, Oxygen saturation)
- T piece system
- Thermometer
- Nasotracheal or orotracheal intubation material
- Material for umbilical venous catheter placement
- EAB and blood and coagulation test tubes
- Adrenalin
- Saline

Set-Up Room

- Phone available
- Infant warmer

Set-Up Simulator

- Actor dressed
- Neonatal simulator

Description of history and status in briefing

Notes:

Scenario Saver

How to react if the medical problem is not identified

Newborn remains apneic and bradycardic

How to react if the medical problem is identified too quickly

Newborn does not recover until all the steps of neonatal resuscitation have been performed correctly

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...

All steps of the neonatal resuscitation flow chart are correctly carried out up to the administration of drugs

Notes:

Simulator Set-Up, Steering

	Phase 1 Birth	Phase 2 Ventilation	Phase 3 Intubation	Phase 4 Chest compression	Phase 4 Adrenalin administration
Vitals	HR: 40 bpm, apnoisch	HR: 40 /min. SpO2: 30%	HR: 50 /min. SpO2: 40%	HR: 50 /min. SpO2: 40%	HR: 120 /min. SpO2: 90%

Text for patient					
Other info					
Management during scenario	monitoring vital parameters	preparation for intubation		preparation for umbilical venous catheter placement and adrenalin preparation	

Notes:

Abstract

Learning Target:	Follow neonatal resuscitation flow chart
Description:	Neonatal asphyxia
Participants:	Students: 2 doctor, 2 nurses

Case Briefing:	
List of Material:	Monitor, T-piece system, material for drugs and heating equipment
Set-Up Room	Delivery room
Set-Up Simulator:	Neonatal simulator
Scenario Saver:	
Scenario End Criteria:	Newborn stabilized
Management during Scenario:	
Other:	

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SIMULATION APPROACH FOR
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IN EMERGENCY

Neonatal Sepsis and Panicked Mother Südtiroler Sanitätsbetrieb (SABES)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	24
<i>Scenario Briefing</i>	25
<i>Script SIM Nurse/Co-Instructor</i>	25
<i>Scenario Saver</i>	26
<i>Scenario End Criteria</i>	27
<i>Simulator Set-Up, Steering</i>	28
<i>Abstract</i>	29

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Identify neonatal sepsis• Stabilize the newborn• Reassure the mother <p>CRM:</p> <ul style="list-style-type: none">• Equipment check• Closed-loop• communication• (I)SBAR	<p>Where: Neonatology department/nursery</p> <p>Frame conditions: Daytime, all resources available</p>	<p>Students</p> <p>Who: 1 doctor 2 nurses mother</p>
<p>Notes: correct communication with the mother during scenario</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>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.</p> <p>The mother stays at the nursery while the staff takes care of the baby</p>		

Notes:

Script SIM Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
-------------------------	--------------------	-------------------------

- Vital Sign Monitor (ECG, SpO2)
- 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:

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:

Scenario End Criteria

Scenario ends when...		
-----------------------	--	--

<p>blood tests are requested and antibiotics are started</p>		
--	--	--

Notes:

Simulator Set-Up, Steering

	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

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:	

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Preterm stabilization Südtiroler Sanitätsbetrieb (SABES)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	34
<i>Scenario Briefing</i>	35
<i>Script SIM Nurse/Co-Instructor</i>	35
<i>Scenario Saver</i>	36
<i>Scenario End Criteria</i>	37
<i>Simulator Set-Up, Steering</i>	38
<i>Abstract</i>	39

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Understanding that it is preterm birth• Follow neonatal resuscitation flow chart• Follow the guidelines of the stabilization of the preterm infant <p>CRM:</p> <ul style="list-style-type: none">• Equipment preparation• Closed-loop communication• (I)SBAR	<p>Where: Delivery room</p> <p>Frame conditions: Daytime, all resources available</p>	<p>Students</p> <p>Who: 1 doctor 2 nurses</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Birth at 29 gestational weeks. Caesarean section for unstoppable labour and breech position. Previously uneventful pregnancy. Clear amniotic fluid</p>	<p>Weight 15kg</p>	

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Vital Sign Monitor (ECG, Oxygen saturation)
- T piece system
- Thermometer
- Cap and plastic bag
- Nasotracheal or orotracheal intubation material
- Material for umbilical venous catheter placement
- EAB and blood and coagulation test tubes
- Adrenaline
- Saline

Set-Up Room

- Infant warmer
- Phone available

Set-Up Simulator

- Actor dressed
- neonatal simulator

Description of history and status in briefing

Notes:

Scenario Saver

How to react if the medical problem is not identified

The newborn becomes bradycardic

How to react if the medical problem is identified too quickly

Heart rate remains below 100 beats per minute

Other comments, material needed for savers (e.g. white coat)

Mask of appropriate size

Notes:

Scenario End Criteria

Scenario ends when...

The infant was stabilised from a respiratory, cardiovascular, metabolic and neurological point of view according to the guidelines

Notes:

Simulator Set-Up, Steering

	Phase 1 Birth	Phase 2 Ventilation	Phase 3 CPAP	Phase 4 Stabilisation
Vitals	HR: 80 bpm	HR: 120 /min. SpO2: 80%	HR: 120 /min. SpO2: 90%	HR: 120 /min. SpO2: 90%

Text for patient				
Other info				Glycemia 30 mg/dl
Management during scenario	monitoring vital parameters	Oxygen according to guidelines		preparation for umbilical venous catheter

Notes:

Abstract

Learning Target:	Follow neonatal resuscitation flow chart and guidelines of the stabilisation of the preterm infant
Description:	Birth of 29 GA newborn
Participants:	Students: 1 doctor, 2 nurses

Case Briefing:	
List of Material:	Monitor, T-piece system, material for drugs and heating equipment
Set-Up Room	Delivery room
Set-Up Simulator:	Neonatal simulator
Scenario Saver:	
Scenario End Criteria:	Infant stabilized
Management during Scenario:	
Other:	

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SIMULATION APPROACH FOR
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Respiratory failure (asthma) Südtiroler Sanitätsbetrieb (SABES)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	44
<i>Scenario Briefing</i>	45
<i>Script SIM Nurse/Co-Instructor</i>	45
<i>Scenario Saver</i>	46
<i>Scenario End Criteria</i>	47
<i>Simulator Set-Up, Steering</i>	48
<i>Abstract</i>	49

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Follow the ABCDE assessment approach• Recognize respiratory failure (FLaVO) and signs of decompensation• Airway support (A)+B (oxygen therapy + self-expanding bag ventilation)• Treatment of asthma <p>CRM:</p> <ul style="list-style-type: none">• Equipment check• Closed-loop communication• AMPLE• SBAR	<p>Where: Paediatric emergency room</p> <p>Frame conditions: Daytime, all resources available</p>	<p>Students</p> <p>Who: 1 doctor 2 nurses</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	
<p>A 6-year-old boy, a known polyallergic to inhalants, has been coming in for aggravated breathing difficulties since today. He has had a dry cough for several days. Today he did not eat much and did not drink.</p>	<p>Weight 20 kg</p>	

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Vital Sign Monitor
- (ECG, Oxygen saturation, blood pressure cuff, Shiller)
- Aspirator
Emergency trolley with:
- Simple O2 mask, mask with reservoir
- Self-expanding flask
- Oro-pharyngeal cannula
- Laryngeal mask (i-gel)
- Thermometer
- Material for venous access
- EZ-IO for i.o.
- EAB and blood and coagulation test tubes
- Adrenaline
- Saline
- Ringer's lactate
- Antibiotics
- Drugs

Set-Up Room

Phone available

Set-Up Simulator

- Actor dressed
- paediatric simulator

Description of history and status in briefing

Notes: QUICK LOOK (B, B, B): B (hyporesponsive, V), B (shallow and rapid breathing), B (pale, cyanosis of the lips and perioral area)

Scenario Saver

INITIAL CONDITIONS

**INITIAL VITAL
PARAMETERS**

**INTENDED ACTIONS
(after quick look and**

Assessment:

A: no foreign bodies

B: shallow, accelerated, symmetrical breathing, diffusely reduced MV, rare expiratory hisses, respiratory distress (inter-/subcostal retractions, nasal fins lifting, see-saw breathing)

C: Central and peripheral pulses present, not preloaded, refill 2-3"

D: AVPU scale: V

E: apyretic, no fever

AMPLE: allergy to various pollen, history of bronchial asthma, takes fluticasone and inhaled salbutamol as needed, has not eaten for 12 hours, breathing poorly since today

AB: RR 40/min, SpO₂ 88% in room air

C: HR 120/min, BP 85/40

evaluation-action in ABCDE sequence)

SSS-A-B:
 place reservoir mask with 100% FiO₂. C: peripheral (venous) vascular access.
 Medication:
 Aerosol salbutamol
 Methyl-prednisolone 2 mg/kg bolus
 Check EGA,
 Examinations
 Chest X-ray
 Admission to TIP Blood chemistry tests if performed give: (respiratory acidosis) - blood glucose 150 - no dyslelectrolytemia

Notes:

Scenario End Criteria

EVOLUTION

ACTIONS TO BE DONE

Scenario ends when...

<p>At the end of the assessment (after AMPLE) → RR decreases to 8 /min No respiratory distress, SatO₂ < 88% with FiO₂ 100%</p>	<p>Start ventilation (2 operators) with self-expanding balloon with 100% FiO₂</p> <p>If ventilation → SpO₂ 93-94%</p>	<p>After ventilation</p>
---	---	--------------------------

Notes:

Simulator Set-Up, Steering

	Initials	Evolution
Vitals	RR 40/min, SpO ₂ 88% in room air, HR 120/min, BP 85/40	RR 8/min
Text for patient		

Other info		
Management during scenario	Prepare for ventilation and drugs	Ask for X-Ray

Notes:

Abstract

Learning Target:	Follow the ABCDE assessment approach, recognize respiratory failure and signs of decompensation
Description:	A 6-year-old boy with respiratory failure
Participants:	Students: 1 doctor, 2 nurses
Case Briefing:	

List of Material:	Monitor, emergency trolley
Set-Up Room	Paediatric emergency room
Set-Up Simulator:	Paediatric simulator
Scenario Saver:	
Scenario End Criteria:	Ventilation
Management during Scenario:	
Other:	

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SIMULATION APPROACH FOR
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Septic Shock - Infant Südtiroler Sanitätsbetrieb (SABES)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	54
<i>Scenario Briefing</i>	55
<i>Script SIM Nurse/Co-Instructor</i>	56
<i>Scenario Saver</i>	57
<i>Scenario End Criteria</i>	58
<i>Simulator Set-Up, Steering</i>	59
<i>Abstract</i>	60

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Follow the ABCDE assessment approach• Recognize circulatory insufficiency (5 P) and signs of decompensation• Early vascular access (iv/IO)• Perform crystalloid boluses (Ringer’s lactate/phys. sol.) 10 ml/kg• Perform examinations + blood culture and start broad-spectrum antibiotic therapy (ceftriaxone 100 mg/kg) within the 1st hour• Think of vasoactive drugs <p>CRM:</p> <ul style="list-style-type: none">• Equipment check• Closed-loop• communication• AMPLE• SBAR	<p>Where: Paediatric emergency room</p> <p>Frame conditions: Daytime, all resources available</p>	<p>Students</p> <p>Who: 1 doctor 2 nurses</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>A 2-year-old boy, who had already been seen the previous day by his paediatrician for an otitis, is brought to your attention in the emergency room as he has a very high fever (T° 39°C) that does not abate after administration of paracetamol. He is hypo-responsive and is pale-greyish.</p>	<p>Weight 15kg</p>	

Notes:

Script SIM Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
<ul style="list-style-type: none">• Vital Sign Monitor (ECG, SpO2, blood pressure cuff, Shiller)• Aspirator• Emergency trolley with:• Simple O2 mask, mask with reservoir• Self-expanding flask• Oro-pharyngeal cannula• Laryngeal mask (i-gel)• Thermometer• material for venous access• EZ-IO for i.o.• EAB and blood and coagulation test tubes• Adrenaline• Saline• Ringer's lactate• Antibiotics• Drugs	<p>Phone available</p>	<ul style="list-style-type: none">• Actor dressed• Paediatric simulator <p>Description of history and status in briefing</p>

Notes: QUICK LOOK (B, B, B): hypo-responsive, shallow breathing, skin pale-greyish.

Scenario Saver

Initial Conditions	INITIAL VITAL PARAMETERS	INTENDED ACTIONS (after quick look and evaluation-action in ABCDE sequence)
<p>Rating: A: at risk (deterioration of consciousness) B: Very shallow, symmetrical breathing, no pathological noises on auscultation, tachypnoea, no increase in work of breathing, no central cyanosis C: Cold and tidal extremities, TR 5", weak central and absent peripheral pulses, liver margin 1 cm from the costal arch, no jugular turgor D: AVPU scale: P (responsive to pain) E: Petechiae on chest and abdomen extending to neck and root of limbs</p> <p>AMPLE: no allergies, 1 dose of augmentin, he has always been well, last meal 12 hours ago, feverish for 3 days</p>	<p>AB: RR 40/min, SpO2 undetectable due to intense peripheral vasoconstriction C: HR 180/min, BP 60/20</p>	<p>SSS-A-B: opening and maintenance of airway patency, reservoir mask with 100% FiO2. Assessment and preparation for early intubation C: failed peripheral venous access: intraosseous access. Three fluid boluses 10ml/Kg in 10 min + inotropes in continuous infusion. Check EGA, blood count and coagulation and infuse blood products if necessary. Start antibiotics after culture examinations. Admission to TIP Blood chemistry tests if performed give: pH 7.10- pCO2 35 mmHg, PaO2 120 mmHg, BE-15, Bicarbonate 12 (metabolic acidosis) - blood glucose 135mg/dl - no dyselectrolytemia Treat hyperthermia</p>

Notes:

Scenario End Criteria

1)EVOLUTION If timely liquid infusion + inotropes	2)EVOLUTION If delayed or insufficient fluid infusion:	Scenario ends when...
Perfusion improvement <ul style="list-style-type: none">• RR (30 bpm)• HR (150 bpm)• refill time (3-4")• BP (70/35 mmHg)	Shock worsening up to PEA/ asystole	After stabilization (2-3 boluses of ringer lactate, culture tests performed and antibiotic started)

ADDITIONAL NOTES FOR THE INSTRUCTOR: - Rapid placement of a venous/IO access to initiate aggressive fluid infusion (avoid delay!). - Repeated fluid boluses may be required in septic shock (up to 40-60 ml/kg in the first hour). Reassess after each bolus. Start inotrope infusion if more than 40 ml/kg is required. - POCUS ultrasound can be very useful in monitoring aggressive infusion policy - Sepsis results in anemia, thrombocytopenia and coagulopathy, which may be exacerbated by dilution: also consider transfusion of blood products. - Indications for early intubation. - Blood cultures as soon as possible, broad-spectrum antibiotic therapy (e.g. ceftriaxone) within the first hour.

Simulator Set-Up, Steering

	Initials	After liquids	Stabilization	End
Vitals	RR 40/min, HR 180/min, BP 60/20 mmHg	RR 40/min, FC 150/min, PA 70/35 mmHg	RR 40/min, FC 150/min, PA 70/35 mmHg	RR 40/min, FC 150/min, PA 70/35 mmHg
Text for patient				
Other info				
Management during scenario	Preparation for ventilation and venous access (IO)	Preparation for bolus	Ringer's lactate bolus	Blood exams and antibiotics therapy

Notes:

Abstract

Learning Target:	Follow the ABCDE assessment approach, recognize circulatory insufficiency and signs of decompensation
Description:	A 2-year-old boy with septic shock
Participants:	Students: 1 doctor, 2 nurses
Case Briefing:	
List of Material:	Monitor, emergency trolley
Set-Up Room	Paediatric emergency room
Set-Up Simulator:	Paediatric simulator
Scenario Saver:	
Scenario End Criteria:	Stabilization
Management during Scenario:	
Other:	

SAFETY

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SIMULATION APPROACH FOR
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Acute Coronary Syndrome (ACS) University of Stavanger (UiS)



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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	5
<i>Scenario Saver</i>	6
<i>Scenario End Criteria</i>	7
<i>Simulator Set-Up, Steering</i>	8
<i>Abstract</i>	9

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• perform ECG diagnosis• History taking• able to manage an ACS medically <p>CRM:</p> <ul style="list-style-type: none">• Communication skills• Team leadership• Closed loop• Communication• SBAR	<p>Where: Emergency department</p> <p>Frame conditions: A busy day in the emergency department</p>	<p>Students in role of:</p> <ul style="list-style-type: none">• 1-2 doctors• 1-2 nurses <p>Others:</p> <ul style="list-style-type: none">• Patient (Standardized Patient)• Interventional cardiologist (on the phone)• senior doctor (if required – see section <i>How to react if the medical problem is not identified</i>)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
50 year old patient (Mr. Falco) presents to the emergency department with crushing chest pain	<p>SP: You are Mr. Falcone, a 50 year old man</p> <p>You have crushing chest pain, that started 45 minutes ago, it radiates down your left arm, you feel nauseated. Nothing makes it better or worse. It's the worst pain you have ever experienced</p> <ul style="list-style-type: none">• You smoke 20 cigarettes per day since you were 20.• You have high blood pressure• You are otherwise well.• You take bisoprolol 5 mg once a day for your blood pressure• You have no allergies• You are lawyer – married with two grown up children• Your dad died of a heart attack the age of 50. <p>If morphine is prescribed chest pain decreases</p>	<p>Doctor – this is your first shift as a medical doctor after completing medical school</p> <p>Nurse- you are an experienced emergency department nurse (for nursing students – can change to less experience nurse)</p> <p>Patient – see medical history below, you have chest pain, it gets better with morphine and then you get the pain back – Actor</p> <p>Interventional cardiologist – You should be phoned by doctor – ensure he/she is using SBAR it not ask them to structure their presentation of the patient - Actor</p> <p>Senior doctor – see section <i>How to react if the medical problem is not identified –Actor</i></p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Stethoscope
- ECG
- Vital signs monitor :
respiratory rate, ECG trace, oxygen saturation, non-invasive blood pressure
- equipment for IV

Access

- defibrillator
- morphine
- oxygen
- nitroglycerine spray
- IV nitroglycerine
- IV heparin
- anti-platelet treatment

Set-Up Room

- Patient in bed
- in the emergency department – acute admissions ward

Set-Up Simulator

Standardized Patient

Notes:

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)
<p><u>Pain not treated</u> Senior doctor enters the rooms and suggest morphine administration</p> <p><u>ECG not taken:</u> Senior doctor enters the rooms and suggest that an ECG be taken</p> <p><u>STEMI not diagnosed:</u> Senior doctors enters the room and interprets ECG</p> <p><u>Cath lab transfer not planned:</u> Senior doctor enters the room and suggest cath lab transfer</p>	<p>Other nurse (same conferderate as senior doctor) enters room and says cath lab is busy, - give perfusion of NTG or heparin</p> <p>Possible SBAR difficulty – Cathlab does not want to accept patient</p>	<p>White coat available for cardiology consultant</p> <p>Phone and recipient if participants want to phone for help</p> <p>If there is not cath lab in the hospital Local procedures regarding thrombolysis and/or transfer to another hospital should apply</p>

Notes:

Scenario End Criteria

Scenario ends when...		
-----------------------	--	--

Doctors phones:

Cath lab using SBAR and patient is accepted for transfer to cath lab

Notes: end the scenario saying:
“The patient is now going to be taken care of, thank you for solving the case”

Simulator Set-Up, Steering

	Phase 1 Start and steady state	Phase 2 Pain management
--	-----------------------------------	----------------------------

Vitals	HR: 100 BP: 140/80 SpO2: 100% CO2: N/A Resp. Rate: 16 Temp:37.0 ECG: Must be requested, 3-lead ECG also shows STEMI signs 12-lead ECG shows anterior wall STEMI	HR 80 Resp rate 12
Text for patient	Pain	Pain better
Other info		
Management during scenario	<u>Doctor: (participant)</u> Ask for vital signs -Give patient double anti-platelet treatment - Make patient pain free with morphine <ul style="list-style-type: none"> • Request an ECG • Interpret the ECG • Arrange transfer • to cath lab for revascularization 	<u>Nurse: (participant)</u> (provide vitals sign, Communicate vitals Signs <ul style="list-style-type: none"> • Suggest pain relief • Suggest ECG • Suggest doctors contact more senior doctor • Ensure closed loop communication
Notes:		

Abstract

Learning Target:	ACS treatment
Description:	Anterior wall STEMI

Participants:	Students: 1 Doctor, 1-s Nurses, Actors/Confederates: 1 patient, 1 invasive cardiologist, (senior doctor)
Case Briefing:	Patient presents with anterior wall STEMI – needs acute revascularisation (according to local protocol)
List of Material:	Vital signs monitor, IV access, medication, 12 lead ECG
Set-Up Room	Emergency department room
Set-Up Simulator:	SP
Scenario Saver:	3 types (see above)
Scenario End Criteria:	When transfer to cath lab is arranged
Management during Scenario:	ACS treatment
Other:	

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SIMULATION APPROACH FOR
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Cardiopulmonary Resuscitation (CPR)

University of Stavanger (UiS)



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DOCUMENT VERSION 01

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Nina Vatland

Summary

<i>Scenario Description</i>	14
<i>Scenario Briefing</i>	15
<i>Script SIM Nurse/Co-Instructor</i>	15
<i>Scenario Saver</i>	16
<i>Scenario End Criteria</i>	17
<i>Simulator Set-Up, Steering</i>	18
<i>Abstract</i>	19

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Recognize the critically ill patient and provide ALS care including high quality CPR• Provide ACLS to a patient with cardiac arrest including recognizing shockable and non-shockable rhythms• Provide post-cardiac arrest care in a patient with ROSC <p>CRM:</p> <ul style="list-style-type: none">• Communicate effectively within an interdisciplinary team during a resuscitation• Prioritize tasks such as medications, interventions and consultations in a critically ill patient• Delegate tasks amongst team members	<p>Where: Indoor Apartment/House</p> <p>Frame conditions: Morning shift</p>	<p>1-2 Medical students 4/5/6 th year 2-4 paramedic students 3rd year</p> <p>Who:</p> <ul style="list-style-type: none">• Paramedic x 2 (or 4)• Doctor (response unit)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>A 55-year-old man (name according to local setting) 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.</p>	<p>Out-call: A 55-year-old man complaining about chest pain.</p> <p>When arriving the scene, he is initially 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.</p> <p>The patient will go into VT with a pulse, and then he will become unconscious with a VF arrest. After 6-10 minutes the patient will have ROSC and the team will need to provide post-ROSC care.</p>	<p><u>Standardized Patient:</u> You are a 55-year-old man with chest pain. The pain started for an hour ago. Your pain is midsternal and radiate to your left arm. The last 20 minutes your pain has increased, and your wife has been worried, so she called the ambulance for help. You are normally healthy and have no underlying diseases. You were outside working in the garden when the pain started. You have felt a bit tired these last couple of weeks. If the paramedics ask, you haven't seen your GP for years. You started the day with a light breakfast.</p> <p>During the scenario, your pain will increase and then you will become unconscious after the paramedics have taken an ECG.</p>

Notes: Make sure to familiarise change to manikin when patient becomes unconscious. Can be also done completely with a manikin

Script SIM Nurse/Co-Instructor

List of Material

- Portable vital signs with defibrillator (LLEAP)
- IV access equipment/Intraosseous set-up
- Equipment for air management (including ETtubes or LMA)
- Medication (Adrenalin, amiodarone)
- Stethoscope
- Laryngoscope

Set-Up Room

- An apartment or a room that looks like a home (could be office as well if no appartement available, then change story to colleague alerting ambulance)
- The paramedics will bring their standardized set-up

Set-Up Simulator

- Standardized patient (pale and clammy)
or
- Just Manikin, dressed

Notes:

Scenario Saver

How to react if the medical problem is not identified

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

How to react if the medical problem is identified too quickly

The patient will have a cardiac arrest for at least 10 minutes before he will get ROSC

Other comments, material needed for savers (e.g. white coat)

Notes:

Scenario End Criteria

Scenario ends when...

The patient gets ROSC and is ready for transfer to hospital

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”

Simulator Set-Up, Steering

Vital Signs

HR: 100/min – 210/min
BP: 100/60
SpO2: 90%

Text for Patient

Management during scenario

ROSC
HR: 60/min
BP: 105/60

CO2:
Resp. Rate: 20/min
Temp: 37 °C
ECG: Anterior STEMI, VT

SpO2: 89%
Resp. Rate: 9/min
Temp: 36 °C
EKG: Sinus

Abstract

Learning Target:	QCPR, communication skills
Description:	CPR (ALS)
Participants:	Paramedics, doctors
Case Briefing:	A 55-year-old man (name according to local setting) with chest pain starting for an hour ago.

List of Material:	
Set-Up Room	Home, alternatively office
Set-Up Simulator:	SP for start, or just Sim
Scenario Saver:	Senior doctor
Scenario End Criteria:	
Management during Scenario:	
Other:	

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SIMULATION APPROACH FOR
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Hypoglycemia University of Stavanger (UiS)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	24
<i>Scenario Briefing</i>	25
<i>Script SIM Nurse/Co-Instructor</i>	25
<i>Scenario Saver</i>	26
<i>Scenario End Criteria</i>	27
<i>Simulator Set-Up, Steering</i>	28
<i>Abstract</i>	29

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Utilize a systematic approach ABCDE• Recognize changes in the physical assessments and provide appropriate interventions according to local guidelines <p>CRM:</p> <ul style="list-style-type: none">• Communicate with interdisciplinary health care team• Focus on closed loop communication during assessment and treatment of a critical ill patient• Use SBAR when communicating with the medical doctor	<p>Where: Parking Lot</p> <p>Frame conditions: Evening shift, all resources available</p>	<p>1 bystander 2 paramedics 1 physician 1 Standardized patient (SP)</p>
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>A person is found in a parking lot by a security guard. The person is recognized as a known drug addict.</p> <p>On scene: Upon arrival at the scene the patient is laying on the ground. His breath smells of alcohol. His skin is pale, cold, and clammy. No visible sign of hemorrhage.</p> <p>The nearest hospital is a 15 minutes' drive away.</p>	<p>SP: First assessment: You react to pain stimuli by groaning (GCS: 7. Eye: No eye opening 1, Motor: Withdrawal from pain:4, Verbal response: incomprehensible sounds 2)</p> <p>On administration of glucose you become alert You do not want to be examined by a doctor in the ED. You deny drinking alcohol or using drugs.</p>	<p>Call out from dispatch at 23:30. A man is found unconscious on a parking lot outside a mall. He does not respond but is breathing.</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Multimonitor
(ECG, NIBP, RR, SaO2)
- IV-access
- Equipment for airway management
- Standard medical kit for prehospital use

Set-Up Room

Prehospital environment

Set-Up Simulator

Standardized patient (SP)
The person is laying on the ground.

The patient's level of consciousness is reduced until the hypoglycemia is corrected.

I-Simulator/SkillQube

Notes:

Scenario Saver

How to react if the medical problem is not identified

If the diagnosis (hypoglycemia) is not identified, the bystander suggests looking in the pocket. In the pocket the participants will find an insulin pen.

How to react if the medical problem is identified too quickly

If the glucose is given early (and before a systematic approach) in the scenario the patient will become unconscious again. Forcing them to repeat the systematic approach.

If the participants are giving antidot the patient still will be unconsciousness.

Other comments, material needed for savers (e.g. white coat)

The students must ensure their own safety during the scenario.

Notes:

Scenario End Criteria

Scenario ends when...

The scenario ends when the students have performed systematic approach and identified the hypoglycemia and administrated glucose.

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”

Simulator Set-Up, Steering

	Phase 1 Initial status	Phase 2 NIV, improvement
Vitals	HR: 110bpm, SR BP: 135/80mmHg SpO2: 96% CO2: NA Resp. Rate: 24	-HR: 90 bpm -BP: 125/65 mmHg; -SpO2: 98 %, -Resp. Rate: 18 -Temp: 35,8°C;

	Temp:35,8 Glucose: 1,8 mmol/L GCS: 7	Glucose: 3,6 mmol/L GCS: 14
Text for patient	Moaning	See briefing
Other info		EAB: pH 7.30 paO2 70 paCO2 51,
Management during scenario		After receiving glucoses, the patient gets alert and the vital signs will normalize

Notes:

Abstract

Learning Target:	Systematic approach XABCDE, SAMPLER and OPQRST, Closed loop communication, SBAR
Description:	Hypoglycemia

Participants:	Paramedic/EMT
Case Briefing:	A person is found in a parking lot by a security guard. The person is recognized as a known drug addict.
List of Material:	Multimonitor, IV access, equipment for airway management, medical-kit
Set-Up Room	Prehospital environment
Set-Up Simulator:	SP
Scenario Saver:	Help from bystander and patient
Scenario End Criteria:	Scenario end after correct identification and treatment is given
Management during Scenario:	See above
Other:	

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SIMULATION APPROACH FOR
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Tension Pneumothorax University of Stavanger (UiS)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	34
<i>Scenario Briefing</i>	35
<i>Script SIM Nurse/Co-Instructor</i>	35
<i>Scenario Saver</i>	36
<i>Scenario End Criteria</i>	37
<i>Simulator Set-Up, Steering</i>	38
<i>Abstract</i>	39

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• ABCDE examination• identify and manage the acute medical problem <p>CRM:</p> <ul style="list-style-type: none">• (SBAR)• Leadership• Closed loop Communication	<p>Where: Outside a nightclub</p> <p>Frame conditions:</p> <ul style="list-style-type: none">• Night time• 15 minute drive to closest hospital	<ul style="list-style-type: none">• Stab victim• 2 Paramedic• Junior doctor
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>The scenario takes place outside a night club. (dark, music play in the background) A 30 year old man has been stabbed on the right side of his chest. There is minimal bleeding from the site.</p> <p>He is conscious, breathing rapidly and complaining of pain on the right sized of his chest.</p>	<p>The stabbing is witnessed and one of his friends called the emergency response team.</p> <p>They have applied pressure to the wound which is now only bleeding superficially.</p> <p>The paramedic team arrive on site 10 minutes after the stabbing.</p> <p>The local hospital is a 15-minute drive away.</p>	<p>Paramedics – one is experienced, one has their first shift.</p> <p>(the experienced paramedic is one of the actors)</p> <p>The junior doctor has just completed medical school</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
-------------------------	--------------------	-------------------------

<ul style="list-style-type: none"> • Portable vital signs monitor (can record 3 lead ECG, oxygen sats and blood pressure) (for example VitalsBridge or LLEAP) • IV access equipment • +/- pneumofix • Defibrillator 	<ul style="list-style-type: none"> • This can be a hybrid Simulation utilizing both Standardized patient (SP) and a simulator. • The patient is lying on the ground. • SP with wound 'drawn' on right side of chest <p>If available:</p> <ul style="list-style-type: none"> • A simulator to perform pressure relief of the chest. 	<ul style="list-style-type: none"> • Standardized patient dressed "club-like", wound on the thorax • Simulator for chest decompression • Scenario can also be done with a simulator throughout
---	--	---

Notes:

Scenario Saver

<p>How to react if the medical problem is not identified</p>	<p>How to react if the medical problem is identified too quickly</p>	<p>Other comments, material needed for savers (e.g. white coat)</p>
---	---	--

<p>More experienced doctor out for a walk observes scenario and asks if a tension pneumothorax has been considered as he appears to have asymmetrical chest movement – more experience doctor can also help with procedure if needed</p>	<p>Arrange transport to hospital –use SBAR to communicate with hospital team</p>	<p>Extra doctor (actor) (see how to react if the medical problem is not identified)</p>
--	--	---

Notes:

Scenario End Criteria

<p>Scenario ends when...</p> <ul style="list-style-type: none"> The doctor or paramedic either Inserts a venflon or a Pneumofix to decompress the pneumothorax (2nd intercostal space in the midclavicular line. Alternatively, 4th or 5th intercostal space in the midaxillary line can be used) 	<p>Scenario Flow</p> <p>The patient is initially able to speak but 2 minutes after arrival of the team, he deteriorates and is too breathless to speak.</p> <p>He is getting cyanotic, tachycardia and hypotensive and his oxygen saturation drops.</p>	
---	--	--

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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2 Decompensation (within 2 minutes)	Phase 3 Treatment
Vitals	-HR: 100 bpm, SR -BP: 140/80 mmHg; -SpO2: 92 %, -Resp. Rate: 24, -Temp: 36,1°C;	-HR: 150 bpm, SR -BP: 80/60 mmHg; -SpO2: 70 %, -Resp. Rate: 24, -Temp: 36,1°C;	-HR: 90 bpm, SR -BP: 110/70 mmHg; -SpO2: 95 %, -Resp. Rate: 22, -Temp: 36,1°C;
Text for patient	Talking, cursing on the stabber, complaining about chest pain right side, shortness of breath	unable to speak and loss of consciousness	
Other info			
Management during scenario		- ABCDE	

		- During B notice the absence of breath sounds on the right side -> decompress the tension pneumothorax	
--	--	--	--

Notes:

Abstract

Learning Target:	Identify and treat an acute medical condition, non-technical skill for team Training
Description:	A young man has been stabbed outside a nightclub
Participants:	Stab victim, paramedic x 2, junior doctor
Case Briefing:	Stabbing, difficulty breathing
List of Material:	Monitor (LLEAP, vital bridge), IV access, pneumofix
Set-Up Room	Outside a nightclub
Set-Up Simulator:	Standardized patient AND/OR simulator

Scenario Saver:	Doctor walking by
Scenario End Criteria:	Patient is treated
Management during Scenario:	Pneumothorax decompression
Other:	

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SIMULATION APPROACH FOR
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Stroke

University of Stavanger (UiS)



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DOCUMENT VERSION 01

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Summary

<i>Scenario Description</i>	44
<i>Scenario Briefing</i>	45
<i>Script SIM Nurse/Co-Instructor</i>	46
<i>Scenario Saver</i>	47
<i>Scenario End Criteria</i>	48
<i>Simulator Set-Up, Steering</i>	49
<i>Abstract</i>	50

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none"> Utilize systematic approach ABCDE when examining the patient. Suggest/identify/suspect relevant diagnosis Act according to local protocol on the suspected diagnosis Can use cognitive tools, for example: FAST tool, NHISS (NHI Stroke Scales) and/or Glasgow Coma Scale (GCS) <p>CRM:</p> <ul style="list-style-type: none"> Utilize closed-loop Communication during the scenario Utilizing SBAR/ISBAR when transferring the patient and/or consulting others. Extra challenge if possible: Taking care of the patient's family if they follow the patient to the ED 	<p>Where: Emergency department</p> <p>Confederate: Neurologist (local stroke team) Standardized patient</p> <p>Frame conditions: morning shift, all resources available</p>	<p>Who:</p> <p>Participants:</p> <ul style="list-style-type: none"> 1-2 Medical students 4/5/6th year 1-2 Nursing students 3rd year 2 paramedic students 3rd year <p>Participants:</p> <ul style="list-style-type: none"> 1-2 Paramedic 1-2 Nurses in ED 1 ED physician
<p>Notes: Use FAST tool and/or NHISS and/or GCS if desired (as cognitive tools in the scenario)</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Young healthy female (39 years), name according to local culture, arrives by ambulance to the ED. She is married and has three kids (3,5,9 Years old) No medical history. Found by her husband on the kitchen floor early in the morning where she had prepared breakfast for the family. She is drowsy but conscious. Left side hemiparesis with facial drop Speech difficulties. The husband called the dispatch center for emergency help.</p> <p><u>Ambulance report:</u></p> <ul style="list-style-type: none"> - Female 39 years - No medical history - Found on the kitchen floor 7.15 - She usually wakes up at 7.00 - Hemiparesis left side - Aphasia - GCS 11 	<p>Standardized Patient: You are dizzy and have trouble speaking. You are calm The left side of the body is paralyzed (you are unable to move the left side of the body), if limbs are lifted they fall down</p> <p>Others: Paramedic: You deliver the patient to the staff in the ED.</p> <p>ED nurse(s): You are on duty in the ED, receiving the patient from the ambulance. See Ambulance report Medical doctor(s): You are on duty in the ED.</p>	<p>Standardized Patient: Your name is Anna Olsen (or according to local culture), you are 39 years old, and have a family with husband and 3 kids (3,5,9 years). Your husband found you on the kitchen floor this morning when you were preparing breakfast. You are only wearing a robe. You are dizzy and have trouble</p> <p>If the participants don't suspect stroke after examining you, you are getting worse: unable to speak and can only make sounds instead of words. You react to pain stimulus, but your eyes are closed.</p> <p>Neurologist: You are on duty and arrive in the ED if the participants calls for help</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Standard ED cart (local)

Vital Sign Monitor with:

- ElectroCardioGram (ECG),
- Respiratory Rate,
- Oxygen saturation,
- Non Invasive Blood Pressure (NIV)
- If available, software to show desired vitals on the Monitor

- Thermometer
- Eye torch (NO PHONE!!)

Cognitive tools:

- Glasgow Coma Scale (GCS)/FAST algorithm/NIHStroke Scale Form.

Medications:

- IV access
- Saline
- Labetlol iv

Set-Up Room

- ED acute bed with Vital Signs Monitor and material as listed.

- Phone available

Set-Up Simulator

- Standardized patient (trained person to present stroke symptoms)

You are calm but have trouble with speaking. Your left side of the body is paralyzed (cannot move)

- the patient has IV-line, no oxygen

Notes:

Scenario Saver

How to react if the medical problem is not identified

The patient's situation is getting worse: aphasia gets worse (she can only make sounds), she almost loses consciousness, reacts on pain. Glasgow Coma Scale drops from 11-8

If the participants still don't suspect stroke an experienced neurologist arrives in the ED and ask for status. He/she associate to stroke and suggest that the patient is referred for a CT scan.

How to react if the medical problem is identified too quickly

If the participants are suspecting Stroke and referring to CT without using the ABCDE approach, the neurologist should enter the room and ask for vitals according to ABCDE.

Other comments, material needed for savers (e.g. white coat)

A white coat for the neurologist to arrive the ED

Notes:

Scenario End Criteria

Scenario ends when...		
The ED physician or the neurologist refers the patient to CT scanning.		

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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2 BP stabilises	Phase 3 deterioration
Vitals	HR: 100 /min, SR BP: 195/ 100 mmHg SpO2: 100%, RR: 18 /min Temp: 37,2 °C Blood sugar: 6,7 mmol/l	HR: 100 /min, SR BP: 140/80 mmHg SpO2: 100%, RR: 18 /min Temp: 37,2 °C Blood sugar: 6,7 mmol/l	HR: 100 /min, SR BP: 195/ 100 mmHg SpO2: 100%, RR: 18 /min Temp: 37,2 °C Blood sugar: 6,7 mmol/l
Text for patient	Awake, answering as per script	Similar Phase 1	No more speech, just moaning
Other info	Critical actions: Administration of labetalol – Phase 2		
Management during scenario			If stroke not addressed/suspected

Notes:

Abstract

Learning Target:	Utilizing ABCDE approach when examining patient, utilize Closed-loop communication during the scenario, utilize SBAR when consulting others
Description:	A young female has stroke symptoms in the ED
Participants:	SP, ED physician, 2 nurses, neurologist (or team according to local Protocol).
Case Briefing:	
List of Material:	ED bed, Vital Signs Monitor, IV access, relevant medication
Set-Up Room	ED room with ED cart
Set-Up Simulator:	SP
Scenario Saver:	The patient loses consciousness if a stroke is not identified/suspected and acted upon
Scenario End Criteria:	When the patient is referred to a CT scan
Management during Scenario:	
Other:	

SAFETY

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SIMULATION APPROACH FOR
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Abdominal Trauma University of Foggia (UniFg)



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Summary

<i>Scenario Description</i>	4
<i>Scenario Briefing</i>	5
<i>Script SIM Nurse/Co-Instructor</i>	5
<i>Scenario Saver</i>	6
<i>Scenario End Criteria</i>	7
<i>Simulator Set-Up, Steering</i>	8
<i>Abstract</i>	9

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• Assessment and ABCDE• Identify abdominal trauma• Treatment according to local protocol. Protocol (if available) should be attached to script <p>CRM:</p> <ul style="list-style-type: none">• Closed-loop• communication• (I)SBAR	<p>Where: Emergency department</p> <p>Frame conditions: Day shift in the ED, all resources available</p>	<ul style="list-style-type: none">• ED physician• ED nurses (1-2)• Surgeon• Radiologist <p>If handover, one or better two members from ambulance team</p>
<p>Notes: Use FAST tool and/or NHISS if desired</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Mrs. Jones (80 years) arrives by ambulance to the ED. <i>(Name and gender adaptable to local circumstances!)</i></p> <p>She has type 2 diabetes mellitus being treated with oral hypoglycemic agents and she has arterial hypertension in good compensation.</p> <p>Early in a hot summer morning, she was hit by a garbage truck during the reversing maneuver.</p> <p>She is conscious and collaborating, but feels pain in her abdomen.</p> <p>The truck driver called the dispatch center for emergency help.</p> <p><u>Ambulance report:</u></p> <ul style="list-style-type: none">- Female 80 years- History of diabetes mellitus and hypertension.- Road polytrauma at 9.30- Conscious and collaborating- abdominal pain <p><u>Vital signs reported (if handover):</u></p> <ul style="list-style-type: none">- RR 30/min- Sat 93% in O₂ 3lt/min- NIV BP 100/60 mmHg- HR 110r <p>Tp 35.6</p>	<p><i>As SP scenario, familiarisation and safety rules for SP need to be established before start!</i></p> <p><u>SP:</u> You are Mrs. Jones, 80yr old. You have chronic diabetes and take pills for it. You were taking your garbage out, saw the truck but it suddenly hit you → you don't remember more, just the friendly garbage man assisting you. You are grateful for the help, but pretty scared and a bit disoriented. You feel abdominal pain and shortness of breath</p>	<p><u>Others:</u> You are on duty in the ED, receiving the patient from the ambulance. See Ambulance report. You have access to the resources usually available in your ED</p>

Notes:

List of Material

- Vital Sign Monitor
- (ECG, Resp. rate, Oxygen saturation, NIV BP)
- Thermometer
- FAST algorithm/NIHSS form
- IV access
- Saline
- EAB and blood and coagulation test tubes
- requests for plasma and red blood cells
- fibrinogen
- tranexamic acid
- FFP

Set-Up Room

- ED acute bed with
- Vital Signs monitor
- Phone available

Set-Up Simulator

- Standardized patient (trained person to managing polytrauma)

Description of history and status in briefing.

Notes:

How to react if the medical problem is not identified

The blood pressure and the saturation level drop;
the respiratory and heart rate increase – see stage “deterioration”
The patient quickly loses consciousness.

An experienced surgeon on call arrives in the ED and ask for status.
He/she suggests the patient is referred for a FAST ultrasound.

How to react if the medical problem is identified too quickly

No problem. The learning goal is to communicate and act according to the protocol.

Possible extra challenge – patient becomes more disoriented, starts wanting to go home.

Possible CRM challenges:
not all team members are listening, information is distributed through handover

Other comments, material needed for savers (e.g. white coat)

- FAST ultrasound

Notes:

Scenario End Criteria

Scenario ends when...

The ED physician or the surgeon will refer the patient to FAST ultrasound

Notes: end the scenario saying:

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

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2 Deterioration	Phase 3 Stabilization	
--	------------------	--------------------------	--------------------------	--

		(2 min if no action)		
Vitals	HR: 130 bpm, SR BP: 80/40 mmHg; SpO2: 98 %, (3lt O2) Resp. Rate: 30, Temp: 35,9°C; GCS 15	HR: 160 /min. BP: 65/35, SpO2: decreasing over 2 min to 75% RR: 40	HR: 100 /min. BP: 100/70 SpO2: 95% RR: 22	
Text for patient	abdominal pain	Silence, loss of consciousness		
Other info				
Management during scenario				

Notes:

Abstract

Learning Target:	Quick look, ABCDE, identify abdominal trauma, Closed-loop communication, SBAR
Description:	An elderly female got hit by a garbage truck and she feels abdominal pain

Participants:	SP, ED physician, 2 nurses, surgeon (or team according to local Protocol).
Case Briefing:	
List of Material:	ED bed, Vital Signs Monitor, IV access, relevant medication
Set-Up Room	ED room
Set-Up Simulator:	SP
Scenario Saver:	The patient loses consciousness if abdominal trauma is not identified/suspected and acted upon
Scenario End Criteria:	When the patient is referred to a FAST ultrasound
Management during Scenario:	
Other:	

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Intoxication

University of Foggia (UniFg)



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Summary

<i>Scenario Description</i>	14
<i>Scenario Briefing</i>	15
<i>Script SIM Nurse/Co-Instructor</i>	15
<i>Scenario Saver</i>	16
<i>Scenario End Criteria</i>	17
<i>Simulator Set-Up, Steering</i>	18
<i>Abstract</i>	19

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• ABCDE• Identify poisoning• Treatment according to poison protocol and complication management• Call poison control center <p>CRM:</p> <ul style="list-style-type: none">• SBAR• establish role and distribute the workload• mobilize resources• closed-loop communication	<p>Where: Emergency department</p> <p>Who:</p> <ul style="list-style-type: none">• Patient• emergency medical team• Nurse• ED physician• anesthetist <p>Frame conditions: Day time</p>	<ul style="list-style-type: none">• Emergency medical team (2-3)• ED physician• ED nurses (2-3)• Anesthetist 1• Patient
<p>Notes: the emergency medical team can consist of 2 emergency medicine specialists and 2 nurses. The anesthetist as a specialist is to be considered as an accessory figure in the specific case who is called in for support if the patient's clinical condition worsens.</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Male (31 years old) arrives in and with ambulance in ED. Found on the streetsleepy, poorly cooperating by the rescue team after a call from two runners.</p> <p>On the spot there are bottles of beer and residue of an unidentified substance in a syringe. No information about his previous clinics, medications or allergies. Intake time unknown</p>	<p>SP: Alcoholic bad breath, vomiting on clothes, numerous signs of venipuncture on the upper limbs. A lethargic patient, he locates and opens his eyes to pain, utters disheartened phrases</p>	<p>Others: You are on duty in the ED, receiving the patient from the ambulance. See Ambulance report and collect information from the medical colleague in the ambulance (SBAR). Ambulance report:</p> <ul style="list-style-type: none">• Male 31 years• No medical history, no information on medications or allergies• Found on the street at 9,15 a.m. (I don't know how long he took the substances)• Pale, swety,poorly cooperative, eye opening after painful stimulus• Obtained venous access and administered O2 in mask with reservoir at 6l / min, coma cocktail: thiamine 100 mg iv, glucosdata 10% 250 ml, naloxone 0.4 mg x2 iv, flumazenil 0.2 mg iv, 250 ml physiological solution 0, 9%. <p>Vital signs:</p> <ul style="list-style-type: none">- RR 12/min- Sat 90%- NIV BP 85/60mmHg- HR 60 bpm- Tp 35,1- capillary blood sugar 71 mg/dl

Notes: A simulator can be very well used as well (no SP), as most of the time unconscious or barely conscious

Script SIM Nurse/Co-Instructor

List of Material

- Vital Sign Monitor
- (ECG, RR, Oxygen saturation, temperature)
- glucometer
- IV access
- blood chemistry test material
- Saline and glucose solution
- Medicines for emergency and poisoning
- material for IOT
- Nasogastric tube

Set-Up Room

- ED acute bed with air heater
- blood gas analyzer
- Vital Signs monitor
- ECG
- Phone available

Set-Up Simulator

- unkempt, dirty patient, with specific signs of habitual use of exogenous substances

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)

<p>Patient in a coma, wasting of vital signs up to ACC</p>	<p>No problem if the algorithms for intoxication are correctly applied. Focus attention on the subsequent phases for differential diagnosis and patient admission</p>	<ul style="list-style-type: none"> • in case of acc an anesthesiologist must be contacted who will collaborate in the management phases of the critical patient. • in case of quick resolution of the clinical case, a poison control center must be contacted for the subsequent phases of patient management based on the reports received from the toxicological tests
--	---	---

Notes:

Scenario End Criteria

<p>Scenario ends when...</p>		
------------------------------	--	--

- The ED requires blood gas analysis and sets the therapy by stabilizing the patient
- requires blood chemistry and toxicological tests.
- Contact Poison Control
- Centre for therapy on suspected alcohol and cocaine poisoning. Improvement of vital parameters and neurological state, it is possible to transport the patient to CT for differential diagnostics.

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”

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2 Treatment
Vitals	-HR: 60 bpm, SR -12-lead: sinus rhythm 60 bpm, st subsile in V2-V3 and AVF, non-specific abnormalities of recovery -BP: 85/60 mmHg; -SpO2: 90 %,	sat 96% if administered O2 in a venturi mask at 50% and fr 14 bpm niv bp 110/70 after volume filling with physiological solution and HR 70 bpm,

	-Resp. Rate: 11, -Temp: 35,1°C; -GCS 12 (E3 V4 M5) -capillary blood sugar 71 mg/dl Pupils: isocoric, light reaction is normal. - BGA metabolic acidosis	normal BGA after administration of bicarbonates GCS 12 (E3 V4 M5) after administration of narcan 0.4 mg iv x2 and metadoxil 300 mg x 2 iv temperature 36.4 ° C after passive heating
Text for patient	Moaning	Moaning
Other info		
Management during scenario		If the participants don't identify poisoning PD eventually loss of consciousness with subsequent vomiting and ACC

Notes: request chest x-ray (multiple bilateral postero-basal thickenings greater to the right of the lower lobe)
 request cardiac enzymes (negative) and cardiological consultations (pending completion)
 toxicological request with cocaine (qualitative +) and alcohol (1.57 g / l)

Abstract

Learning Target:	ABCDE, identify intoxication, Closed-loop communication SBAR
Description:	young man with a probable history of addiction arrives in and by ambulance for poisoning by exogenous substances
Participants:	Emergency medical team (2-3) ED physician ED nurses (2-3) anesthetist (1)

Case Briefing:	man (31 years old) arrives in and with ambulance in ED. Found on the street sleepy, poorly cooperating by the rescue team after a call from two runners. On the spot there are bottles of beer and residue of an unidentified substance in a syringe. No information about his previous clinics, medications or allergies. I do not know the time of taking the poisons
List of Material:	Normal ED cart and monitoring, appropriate medication - Adult simulator OR - SP
Set-Up Room	- ED stretcher with sim - maybe actor
Set-Up Simulator:	- dressed, dirty - iv line - O2 mask
Scenario Saver:	The patient loses consciousness if a poisoning is not identified and respiratory, circulatory and metabolic decompensation is not treated
Scenario End Criteria:	the patient is stabilized, the poison control center is contacted, first level examinations are performed (chest x-ray, ega and ECG) it is decided to perform neurological consultancy and head CT scan for differential diagnosis
Management during Scenario:	Change to sim needed if start with actor
Other:	

SAFETY

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SIMULATION APPROACH FOR
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Multimorbidity and Palliative Care University of Foggia (UniFg)



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Summary

<i>Scenario Description</i>	24
<i>Scenario Briefing</i>	25
<i>Script SIM Nurse/Co-Instructor</i>	25
<i>Scenario Saver</i>	26
<i>Scenario End Criteria</i>	27
<i>Simulator Set-Up, Steering</i>	28
<i>Abstract</i>	29

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• History taking• Recognition of futility of invasive treatments• Setting up a palliative care plan <p>CRM:</p> <ul style="list-style-type: none">• Communication skills• Attention allocation• Info utilization• Team leadership• SBAR (Situation-Background-Assessment- recommendation)	<p>Where: Emergency department</p> <p>Frame conditions: Just a routine day in ED</p>	<ul style="list-style-type: none">• Doctor• Nurse• Patient• Relative• Consultant (if required)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>93 year male patient presenting at the ED with LOC and respiratory failure.</p> <p>Past medical history:</p> <ul style="list-style-type: none">- Hypertension- Diabetes- Chronic kidney failure III- Ischemic heart disease- Chronic heart failure NYHA IV- Multimetastatic pancreas cancer (liver, brain, lung, bones)	<p>See case briefing and detailed patient history below</p>	<p>Doctor – just a routine shift in the ED</p> <p>Nurse – you are an ED nurse with 15 years experience</p> <p>Patient – see past medical history, you have GCS 8 and mild dyspnoea</p> <p>Relative – you called the EMS after your father had a LOC this morning You know every detail of his past medical history as you cared him for years</p> <p>Consultants (if required) – if phoned ensure the requesting doctor is using SBAR, if not ask them to structure their presentation of the patient.</p> <p>If requested for invasive intervention make the requesting doctor think over their clinical and ethical appropriateness (see also How to react if the medical problem is not identified)</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Vital signs monitor
- (ECG, SpO2, NIBP, RR)
- equipment for IV access
- emergency drugs cart
- advanced airway cart
- oxygen plant
- phone

Set-Up Room

- Patient in bed at the ED

Set-Up Simulator

- Old and frail patient makeup
- Simulator can be used as well, wig or mask very helpful

Notes:

Scenario Saver

How to react if the medical problem is not identified

Medical history not taken:
Nurse enters the room saying the patient relative is waiting outside since long time

Futility of invasive treatments not recognized:
Consultants make the doctor think over their clinical and ethical appropriateness

Palliative care plan not formulated:
the relative ask if there is some way to alleviate all those distressing symptoms

How to react if the medical problem is identified too quickly

Dyspnea becomes severe, the patient regains some consciousness and complains about severe generalized pain

Palliative concept needs to be implemented

Other comments, material needed for savers (e.g. white coat)

White coat available for the doctor and any requested consultant

Scrub available for the nurse

Notes:

Scenario End Criteria

Scenario ends when...

Doctor set up a palliative care plan and has an appropriate talk with the patient relative

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”

Simulator Set-Up, Steering

	Phase 1 Start (ans table throughout)	Phase 2 Possible aggravation
Vitals	-HR: 110 bpm, SR, LBB (left branch block) -BP: 80/50 mmHg; -SpO2: 86 %,	-HR: 130 bpm, SR, LBB (left branch block) -BP: 110/70 mmHg; -SpO2: 89 %,

	-Resp. Rate: 2, -Temp: 37,2°C;	-Resp. Rate: 30 -Temp: 37,2°C;
Text for patient	Mumbling, moaning, not very cooperative	More awake, complain about pain, panicked breathing
Other info		
Management during scenario	<p><u>Doctor:</u> Ask for vital signs Ask to speak with the patient relative for past medical history</p> <p><u>Nurse:</u> Provides non invasive monitoring Helps with patient management</p> <p><u>Relative:</u> Provides detailed past medical history (see patient text, enhance with stories about how difficult life is)</p> <p><u>Consultants:</u> Emphasize the questionable appropriateness of invasive treatments</p>	<p><u>Patient history</u> You are a 93 year man presenting at the ED after LOC and respiratory failure.</p> <p>Your past medical history is:</p> <ul style="list-style-type: none"> - Hypertension - Diabetes - Chronic kidney failure III - Ischemic heart disease - Chronic heart failure NYHA IV - Multimetastatic pancreas cancer (liver, brain, lung, bones)
Notes:		

Abstract

Learning Target:	Recognition of futility of invasive treatments and set up of a palliative care plan
Description:	Multimorbid patient needing palliative care
Participants:	1 Doctor, 1 Nurse, 1 Patient, 1 Relative, Consultant (if requested)

Case Briefing:	Multimorbid patient with advanced metastatic cancer presents with LOC and dyspnoea – need for palliative care
List of Material:	Vital signs monitor, IV access, drugs and airway cart, phone
Set-Up Room	Emergency department room
Set-Up Simulator:	
Scenario Saver:	3 types (see above)
Scenario End Criteria:	When Doctor set up a palliative care plan and has an appropriate talk with the patient relative
Management during Scenario:	Vital and past medical history → eventual call to consultants → palliative care plan set up and talk with the patient relative
Other:	

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SIMULATION APPROACH FOR
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Psychosis

University of Foggia (UniFg)



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Summary

<i>Scenario Description</i>	34
<i>Scenario Briefing</i>	35
<i>Script SIM Nurse/Co-Instructor</i>	35
<i>Scenario Saver</i>	36
<i>Scenario End Criteria</i>	37
<i>Simulator Set-Up, Steering</i>	38
<i>Abstract</i>	39

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• History taking• Recognition of psychotic crisis• Setting up of a proper psychiatric therapy <p>CRM:</p> <ul style="list-style-type: none">• Info utilization• Communication skills• Attention allocation• Team leadership• BAR	<p>Where: Emergency department</p> <p>Frame conditions: Just a routine day in the ED</p>	<p>Who:</p> <ul style="list-style-type: none">• Doctor• Nurse• Patient• Relative• Psychiatry consultant <p>(if requested)</p> <ul style="list-style-type: none">• Senior doctor (see section How to react if the medical problem is not identified)
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>24 year woman presenting at the ED with hallucinations, acute agitation and paranoid delusions</p>	<p>See case briefing and detailed patient history below</p>	<p>Doctor – just a routine shift in the ED</p> <p>Nurse – you are an experienced ED nurse</p> <p>Patient – see past medical history, you are severely agitated and have hallucinations and paranoid delusions</p> <p>Relative – you called the EMS after being called by your sister’s neighbour who found her severely agitated in front of her house</p> <p>Psychiatry consultant (if required) – if phoned ensure the requesting doctor is using SBAR, if not ask them to structure their presentation of the patient.</p> <p>Senior doctor (see How to react if the medical problem is not identified)</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Vital signs monitor (ECG, SpO2, NIBP, RR)
- equipment for IV access
- emergency drugs cart
- advanced airway cart
- oxygen plant
- phone

Set-Up Room

Patient in bed at the ED

Set-Up Simulator

Young woman with unkept appearance (not very clean clothes, messy hair, dirty nails, etc.)

Notes: This scenario is doable ONLY with an SP, who has to be well trained in the case. Could work with a man as well – just change briefing accordingly

Scenario Saver

How to react if the medical problem is not identified

Medical history not taken:
Nurse enters the room saying the patient relative is waiting outside since long time

Psychotic crisis not recognized:
Senior doctor enters the room hearing a lot of noise, asking what happened and suggesting the doctor to call the psychiatry consultant

How to react if the medical problem is identified too quickly

The patient develops increasing mistrust towards the team, which has to find a strategy to administer the requested therapy

Other comments, material needed for savers (e.g. white coat)

White coat available for the doctor and requested consultant

Scrub available for the nurse

Notes:

Scenario End Criteria

Scenario ends when...

The doctor administers the appropriate antipsychotic therapy (by himself or suggested by the consultant)

Notes: General note – end the scenario saying:
“The patient is now going to be taken care of, thank you for solving the case”

Simulator Set-Up, Steering

	Phase 1 Continuous – vitals don't change much, tachycardia reduces after the patient calms down a bit
Vitals	HR: 115 BP: 130/80 SpO2: 99% Resp. Rate: 18

	Temp:37.2 ECG: sinus tachycardia
Text for patient	<p>You are a 24 year woman presenting at the ED with hallucinations, acute agitation and paranoid delusions.</p> <p>You are not able to report your past medical history. If asked you can only tell that you spent some time with other people in an environment different from your house after your parents divorce. In that place they gave you several pills.</p> <p>Past medical history (to be reported by the patient's relative if asked):</p> <ul style="list-style-type: none"> - Psychiatric disorder arose after their parents' divorce, of which she does not know the details or therapy
Other info	
Management during scenario	<p>Doctor: Ask for vital signs Ask to speak with the patient relative for past medical history</p> <p>Nurse: Provides non invasive monitoring Helps with patient management</p> <p>Relative: Provides past medical history</p> <p>Psychiatry consultant: Helps the doctor with the differential diagnosis of the psychiatric disorders which could match the case</p>

Abstract

Learning Target:	Recognition of a psychotic crisis
Description:	Psychotic patient suffering from a schizoaffective disorder
Participants:	1 Doctor, 1 Nurse, 1 Patient, 1 Relative, 1 Senior doctor (saver), Psychiatry consultant (if requested)
Case Briefing:	24 years old woman presenting at the ED with hallucinations, acute agitation and paranoid delusions

List of Material:	Vital signs monitor, IV access, drugs and airway cart, phone
Set-Up Room	Emergency department room
Set-Up Simulator:	
Scenario Saver:	2 types (see above)
Scenario End Criteria:	The doctor administer the appropriate antipsychotic therapy (by himself or suggested by the consultant)
Management during Scenario:	Vital and past medical history → eventual call to consultants → psychotic crisis diagnosis and proper treatment
Other:	

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SIMULATION APPROACH FOR
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Respiratory Failure University of Foggia (UniFg)



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Summary

<i>Scenario Description</i>	44
<i>Scenario Briefing</i>	45
<i>Script SIM Nurse/Co-Instructor</i>	45
<i>Scenario Saver</i>	46
<i>Scenario End Criteria</i>	47
<i>Simulator Set-Up, Steering</i>	48
<i>Abstract</i>	49

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none">• identify and manage respiratory failure• manage the obese patient• manage sedation• decision making criteria for the choice of ventilation• airway control <p>CRM:</p> <ul style="list-style-type: none">• designate leadership• establish role and distribute the workload• mobilize resources• closed-loop communication• SBAR	<p>Where: Emergency department</p> <p>Frame conditions: A busy day in the ED</p>	<ul style="list-style-type: none">• ED physician• ED nurses (1-2)• patient• resuscitator physician
<p>Notes:</p>		

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual Positions)	Case Briefing (Roleplayers)
<p>Male (55years) arrives by ambulance to the ED. He is conscious and collaborating, but agitated and restless.</p> <p><u>Ambulance report:</u></p> <ul style="list-style-type: none"> - Male, 55 years - Weight: 125Kg - Height: 173 cm - Heavy smoker, 20 cigarettes/day - Orthopnea and worsening dyspnea with use of accessory muscles <p><u>Vital signs:</u></p> <p>RR 30/min Sat 82% in O2 2lt/min NIV BP 135/85 mmHg HR 120r Tp 36,5°C</p>	<p>SP – on inquiry, you divulge:</p> <ul style="list-style-type: none"> - previous heart attack; - NYHA class II; - history of OSAS; - previous hospitalization in subintensive respiratory for pneumonia and history of DVT on varicose veins lower extremities; 	<p>You are on duty in the ED, receiving the patient from the ambulance. See ambulance report</p>

Notes:

Script SIM Nurse/Co-Instructor

List of Material

- Vital signs monitor (respiratory rate, ECG, oxygen saturations, NIV BP)
- Thermometer
- equipment for IV access
- saline
- EAB
- NIV and airway management devices
- infusion pumps
- medicines

- If EAB is required:
pH 7,19 paO2 56 paCO2 73 HCO3 33

- If Rx chest is required:
Diffuse thickening of the interstitial texture

Set-Up Room

- ED acute bed with vital signs monitor
- phone available

Set-Up Simulator

standardized patient (trained person to present respiratory failure)

Notes: appropriate Tx Rx needed. Blood gas should be according to local design

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)
<p>If the ED doctor does not decide to start NIV immediately, but to proceed with a clinical examination and laboratory tests, saturation level drop (78%) and agitation increases.</p> <p>the nurse suggests to the ED physician to start ventilation or to contact the consultant</p>	<p>If the ED doctor decides to start a cycle of NIV, saturation increase (90%) but persists agitation, tachycardia, tachypnea and hypertension</p> <p>the nurse asks the doctor if it is necessary to prepare a sedative (dexmedetomidine)</p> <p>The learning goal is to communicate and act according to the protocol.</p>	<p>An experienced consultant on call arrives in the ED to ask for status. He/she suggests for airway control and intubation</p>

Notes: Make sure to have the local protocol available and adapt the case accordingly!

Scenario End Criteria

Scenario ends when...		
------------------------------	--	--

<p>The ED physician or the consultant set adequate ventilation modes and sedation</p>		
---	--	--

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”

Simulator Set-Up, Steering

	Phase 1 Initial status	Phase 2 Possible aggravation	Phase 3 NIV, improvement
Vitals	HR: 120bpm BP: 135/85mmHg SpO2: 82%	-HR: 140 bpm -BP: 160/85 mmHg; -SpO2: 78 %,	-HR: 87 bpm -BP: 120/65 mmHg; -SpO2: 92 %,

	CO2: 73 Resp. Rate: 25 Temp:36,5	-Resp. Rate: 35 -Temp: 36,5°C;	-Resp. Rate: 20 -Temp: 36,5°C;
Text for patient	Agitated, "can't breathe"	Fear of dying, more agitation eventually loose consciousness	
Other info			EAB: pH 7.30 paO2 70 paCO2 51,
Management during scenario		-	
Notes:			

Abstract

Learning Target:	Identify and manage respiratory failure, decision making criteria for the choice of ventilation, CRM
Description:	A 55 years male, obese, BPCO, arrives in ED with dyspnea and orthopnea, agitated and restless

Participants:	ED physician, 1-2 nurses, patient, Consultant (if requested)
Case Briefing:	
List of Material:	ED bed, Vital Signs Monitor, IV access, EAB, NIV, medication
Set-Up Room	Emergency department room
Set-Up Simulator:	SP with instructions
Scenario Saver:	Consultant
Scenario End Criteria:	The ED physician or the resuscitator physician set adequate ventilation modes and sedation
Management during Scenario:	
Other:	