

SAFETY

simulation for medical practice

SIMULATION APPROACH FOR
EDUCATION AND TRAINING
IN EMERGENCY

Distributive shock/ Anaphylaxis

Mihai Stefan, Cornelia-Elena Predoi, Liana

Valeanu, Cosmin Balan, Cornel Robu,

Serban Bubenek Turconi, Daniela

Filipescu, EICD



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VIRTUAL PATIENTS



Co-funded by the
Erasmus+ Programme
of the European Union

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DOCUMENT VERSION 01

AUTHORS

Mihai Stefan, EICD

Cornelia-Elena Predoi, EICD

Liana Valeanu, EICD

Cosmin Balan, EICD

Cornel Robu, EICD

Serban Bubenek Turconi, EICD

Daniela Filipescu, EICD

Sim-Scenario

Name/Nr. Anaphylactic shock

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> <ul style="list-style-type: none">- post-operative setting- High dependency unit <p>Frame conditions:</p> <ul style="list-style-type: none">- early day shift- university hospital- all resources available	<p>Participants</p> <ul style="list-style-type: none">- students <p>And/or</p> <ul style="list-style-type: none">- trainee physicians <p>And/or</p> <ul style="list-style-type: none">- trainee nurses <p>Roles:</p> <ul style="list-style-type: none">- 2 doctors, senior and junior or both junior- 1 or 2 nurses

Notes:

Sim-Scenario

Name/Nr. Anaphylactic shock

Scenario Briefing

Briefing (everyone)	Additional Briefing (Individual Positions)	Case Briefing (Role-players)
<p>Mr. Anton J. is a 54-year-old man, who is in day 3 after a liver tumour resection. 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 in place, dripping.</p>		<p>If nurse is actor and Not trainee – Available for permanent assistance</p> <p>Should be aware of surroundings and trained in assisting airway management</p>

Notes:

Sim-Scenario

Name/Nr. Anaphylactic shock

Script Sim Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
<ul style="list-style-type: none">- 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.	<ul style="list-style-type: none">- hospital bed with high fidelity simulator- vital functions monitor	<ul style="list-style-type: none">- 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:

Sim-Scenario

Name/Nr. Anaphylactic shock

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)
<ul style="list-style-type: none">- the nurse (actor) can say everything happened when FFP infusion was started- if unclear how to manage – send senior in	<ul style="list-style-type: none">- patient can have refractory anaphylaxis or poor response to initial therapy- case can be led towards cardiac arrest (V fib, responds to first shock)	

Notes:

Sim-Scenario

Name/Nr. Anaphylactic shock

Scenario End Criteria

Scenario ends when..		
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<ul style="list-style-type: none">- airway is controlled- epinephrine has been given- patient is stable- adjunctive therapy has been given		
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Notes: Don't let the patient die!
General note – end the scenario saying:
“The patient is now going to be taken care of, thank you for solving the case”

Sim-Scenario

Name/Nr. Anaphylactic shock

Simulator Set-Up, Steering

	Phase 1 Start	Phase 2
Vitals	HR: 105/min, sinus rhythm BP: 96/55 mmHg	HR: 135/min, sinus rhythm BP: 78/45 mmHg

	SpO2: 97% CO2: unavailable Resp. Rate: 22/min Temp: 37.4 Dysphonia, at pulmonary auscultation - sibilant rhonchi	SpO2: 87% CO2: unavailable Resp. Rate: 30/min 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

Sim-Scenario

Name/Nr. Anaphylactic shock

Simulator Set-Up, Steering 2

	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	HR: 160/min, sinus rhythm BP: 50/30 mmHg SpO2: 80% CO2: unavailable Resp. Rate: 40/min, shallow breathing Temp: 37.4

		Resp. Rate: 22/min 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/kh iv bolus)		
Management during scenario	- should consider arterial line - should consider second epinephrine dose or iv continuous drip - should consider adjunctive therapy (corticoids, anti H1/H2)		- should give epinephrine - should perform airway management - difficult physiologic and/or anatomic airway - should consider glottic edema and prepare with cricothyrotomy kit

Notes:

Sim-Scenario

Name/Nr. Anaphylactic shock

Abstract

Learning Target:	Recognition and management of Anaphylaxis / Anaphylactic shock
Description:	Patient, day 3 post-op, develops an anaphylactic shock to FFP transfusion
Participants:	- 2 doctors, senior and junior or both junior - 1 or 2 nurses Suitable also for residents
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:	
Notes:	