onBoardMED

TEACHER'S MANUAL

Course:

Advanced Emergency Care

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The purpose of the teacher's manual is to assist teachers in organizing and introducing course. It is not the intention of teacher's manual to present teachers with a rigid "teaching package" which they are expected to "follow blindly". The teacher manual has been designed to give ideas to use material done in OnBoard Med –project.

NAME OF THE COURSE AND ECTS

Advanced Emergency Care, 5 ECTS, 135 hours

OBJECTIVES for students

Learning objectives are related to independent work in emergency care situations (decision making) and co-operation with authorities in treatments, making working diagnosis and an emergency care plan, based on patient history, observations, symptoms and findings in collaboration with a physician.

CONTENT of the course

At the end of this course students will be able to:

- Provide successfully emergency care in team, students understand process essence and take decisions according to their competence
- Recognizes and assess life-threatening conditions
- Classify and identify healthcare priorities in emergency situation stage, plan, organize and perform emergency care based on patient assessment and patients needs
- Assess, provide and maintain patient's vital functions using methods of non-invasive monitoring
- Organize emergency health care in cases of organs and organ systems lesion, trauma
- Perform cardiopulmonary resuscitation
- Recognize and identify life-threatening arrhythmias, use defibrillator in cases of ventricular fibrillation
- assess the stage of respiratory failure; examine functions of ventilation and oxygenation
- Demonstrate and use manual methods to prevent airway obstruction
- Use instrumental methods to prevent airway obstruction: oro/nasopharyngeal airway; laryngeal tube; combined intubation-esophageal tube; laryngeal mask, PRO-SEAL; endotracheal intubation
- Provide non-invasive ventilation using methods and equipment of non-invasive ventilation, ventilation with Ambu bag
- Perform patient health care in cases of shock: cardiogenic shock; anaphylactic shock; hypovolemic shock; traumatic shock
- Perform emergency health care in cases of hypo/hyperglycaemia
- Provide patient health care in cases of different immobilization, fixation
- Organize and provide emergency health care in specific situations: drowning; falling from a height; burns; hypothermia-freezing; electric shock; intentional self-harm; mechanical

asphyxia: neck compression- strangulation, chest and abdomen compression; occlusion of airways and breathing apertures; violence

- Interpret laboratory examinations; associate them with certain clinical situation
- Assess mental health problems
- Assess and act accordingly in emergency situations with children involved

TARGET GROUP AND STUDENT AMOUNT:

Ship nurses and/or nursing students wanting to become ship nurses. Groups of 10-12 students at a time for lectures and practical lessons, in groups of 2-5 for simulation practices.

IMPLEMENTATION and learning methods

- **LEARNING METHODS** lecture, low fidelity simulation, e-learning, exercise, skill lab, high fidelity simulation
- Equipment related to medical care that is available on board on cargo ships and passenger ships
- **LEARNING PROCESS –** students should acquire knowledge and learn practical skills, that can be used in real-life

- **eLearning** is learning utilizing electronic technologies to access educational material outside a traditional classroom. eLearning can be f. ex. online videos, lectures, discussions, teacher consultation, e-testing.
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- **Exercise** is an activity carried out for a specific purpose in online or face to face and can be individual or group exercise. F. ex. pre tasks, classroom exercise, model answer questions.
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- **Lecture:** an educational and theoretical talk to the students which should be interactive. When the instructor incorporates engagement triggers and breaks the lecture at least once per class to have students participate in an activity that lets them work. The engagement triggers capture and maintain student attention and allow students to apply what they have learned or give them a context for upcoming lecture material. Lecture can be online, video lecture or face to face.
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- **Skill lab** provide students with an opportunity to learn and develop the skills essential to nursing / maritime practice within a supportive and safe environment.
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- **Simulation** is a form of experiential learning. Where teacher sets problems, events or scenario that can be used for training students, how to behave in authentic situation within a supportive and safe environment. It includes introduction, simulation and debriefing.
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- **Workshop** is a period of practical work on a particular subject in which a small group of people share their knowledge or experience. Workshop can also be like learning café where you develop new ideas or approaches to specific subject.

STUDENTS USE OF TIME

- pre-work 1 h
- online lecture 3 h,
- skill labs 8 h,
- Independent e-exercise 1 h,
- low fidelity simulation 4 h

- tests – 10 h preparation, 1 h test

ASSESSMENT

- Tests are assessed on a pass-fail basis
- If longer tests are taken, they can be graded
- Simulation is on pass-needs improvement-fail basis.

CONTENT Summary.

Content summary gives the teacher an idea what topics are discussed and learned in this course, and what kind of teaching methods can be used.

Title of the topic	**Teaching methods/Form**	**Teaching hours(0,45 min)**
Adults advanced resuscitation algorithm	Practice lessons (simulations)	2/6
Acute respiratory failure, Airways permeability providing methods, Airways permeability providing practical assessment	Lecture/ Practice lessons (simulations)	2/6
Injuries: Thoracic and abdominal cavity injuries, bleeding. Bone fractures: immobilization/ fixation.	Lecture/ Practice lessons Workshop Simulation	2/4 2 4
Large blood haemorrhage	Lecture/ Practice lessons (simulations)	1/2
Shock: kinds, pathophysiology, clinical features, patients/ klients emergency care-taking	Lecture/ Practice lessons (Simulations)	2/4
Multiple trauma patient: emergency care priorities	Lecture/ Practice lessons Workshop Simulation	2/4 4 4
Cardiovascular diseases: Acute coronary syndrome: diagnostic, clinical features, treatment. Acute heart failure. Life threatening arrhythmias. Defibrillation: indications, equipment Cardiogenic shock, Control methods of hemodynamic in urgent cardiology	Lecture/ Practice lessons	2/4

Acute infections	Lecture	1
Non-hospital birth: CPR for pregnant women: particularities, teamwork management, CPR newborn. Postpartum haemorrhage: urgent action, conditions. Severe pre-eclampsia and eclampsia: care-taking priorities	Lecture/ Practice lessons (simulation)	2/5
Wound care: burns, cuts wounds	Practice lessons Workshop Simulation	2 2 4
Meeting aggressive patients: alcohol delirium	Lecture Simulation	1 2
Mental health	Lecture Simulation	1 4
Emergencies with child patient	Lecture Workshops Simulation	1 4 4
Summary **Practise lessons = Workshops** **Practice lessons(simulation) = simulation**		22 h lessons (a´45 min) 12h Skill labs + 12 23 h + 22h Simulation

TIPS FOR TEACHER

There are pre-tasks in a test for available for a number of topics.

A simulation bank is also available

Simulation bank

Patient situation/simulation Bank

You can found the list of different scenarios in medical emergencies. You can choose any case You want, if it is suitable and relavant for Your course. In every case You will found patient, name, age, environment, main objectives in cases, main symptoms and diseases, findings after Patient examination, main nursing procedures and TRIAGE classification (**red** yellow **green**). In some topic You will found 2 cases, level 1 and level 2. Level 1 is not so complicated than case level 2.

Here is a few examples

Pasi Laakso 111188-1122 outside on the deck The nearest port 2 hours by boat	Assess patient according to ABCDE.	Multitrauma patient	A and B: Injury on thorax with trouble to rising and falling during inspiration and expiration, C: Blood pressure 85-120/50-90, pulse 120, ST D: Unconscious. E: leg are in a different position. , upper arm is blue	02. Cervical collar. Intravenous needle. Stabilize hole body. Evacuation.	

Cecilia Eklund 050228-198A in Stairs The nearest port 4 hours by boat	Communication to patient. Assess patient's body. Assess ABCDE.	Hip fracture, left side.	Patient has a shorter, efferent left leg. And pain in both hip and knee.	O2. Intravenous needle. Painkiller. Stabilize leg in a collar. Evacuation.	

Raija Kaarina Ranta 110743-1243 in hall near the elevator The nearest port 4 hours by boat		don´t know where she is right now, no oriented NOTE! No brain attack, dementia	A and B: Breaths 16 /min, symmetry C: Bloodpressure 145/75, Pulse 85 D: No problems, symmetry E: No other injuries	Health assessment	

Simulation scenario

You will found the specific description of every scenarios in simulation bank with different kind of learning objectives, patient`s roles, summary of the scenario from the beginning to the end, equipment list and tips for debriefing too.

Scenario. Alcohol poisoning

Scenario Patient with acute alchohol poisoning onboard	**Technical problem** Alcohol poisoning Fluid imbalance Need for iv access	**No technical problem:** Communication with patient – hard, patient responsive but incoherent
Learning objective Know what to do in this kind of situation, alcohol poisoning	**Technical objective** know how to do the patient examination based on ABCDE, know what vital sign monitoring in this situation means, How to check and treat fluid imbalance	**No technical objective** Communication with patient and his friend Communication and leadership with other crew members, if these are available
Patient **Viktors Kalns** **260596-111H** **Patient´s friend** **Aleksander Ans**	Viktors is a young man from Latvia, who had drunk too much at the bar. Situation presents with a disoriented Viktors, who has slurred speech, then profuse vomiting.	**Home medication** -

Summary of the scenario and **the situation in the beginning**	Ship security gets a call to info. There is a person, who is disoriented and with slurred speech. A friend of this patient is there too. This friend is drunk too much too, but not so much than a other. The patient can still walk, but feels dizziness, a lot. He can not answer any more, no eye contact; really drunk, but standing still. Viktors doesn't understand where he is, but is not aggressive. When the ship nurse and security man will come near the patient and start to make patient examination, patient start to vomiting heavily x 2. Patient transfer to ship nurse`s office. By wheelchair or lifting with other crew member´s. Not vomiting in this moment. He is nicely, not speaking at all. Patient´s friend would like to go back to disco, when the ship nurse and security man come. There is so many other friends who are still waiting.

	In ship nurse`s office; vital monitoring with equipment (Blood pressure, Pulse, Sa02, temperature, EKG, GCS, Breaths 14) and treatment with 28-40 % oxygen mask, iv. canyl). The patient does´t answer there in medical room. He sleeps only, Breaths 8-14. **Step 1.** Blood pressure 105/ 65, Pulse 105, Sao2 92, temperature 36,4, GCS 14 (No orientated, no movements when asking, but with pain Yes, Both pupils ok, no differences between left or right) (First measurement in ship nurse´s office) No iv-canyl or fluid or oxygen mask yet. **Step 2.** Blood pressure 90/55, pulse 115, Temperature 36,4; GCS 12-13 **Step 3.** Blood pressure 110/60, Pulse 95, Sao2 94 (Iv-canyl and Nao,9 500->, Oxygen 28%) GCS 12-13, Like in step 2.

Environment: 1. Info desk onboard

2. Ship nurse´s office onboard in passenger vessel

Equipment if needed:

Emergency care bag (normal and Oxygen bag)

EKG monitoring system ; blood pressure, Pulse, SaO2

Stethoscope

iv-canyl and other fluid balance equipment; Na0,9% 500ml-1000ml

Patient transfer equipment: wheelchair, red transfer blanket or green lifting blanket

Hand desinfection

Medication possibilities:

Check the ship pharmacy list based on STCW and company`s list of other medication.

Medication for vomiting

_____

_____

Medication for something else

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Extra material for sharing to participants:

Prematerial:

Patient`s/Participant roles descriptions:

STEP 1**.** Viktors walks with his friend, feels dizziness, cannot answer questions clearly. Strong alcohol smell on breath. He stands still. When the ship nurse and security man will come near the patient he starts to vomiting x 2. Normal, green fluid, no blood or food in this. Breaths 14. Normal lung sounds.

Friend Alexander helps his friend. He is drunk alcohol too, but not so much than Viktor. Aleksander would like to go to disco back as soon as possible, because there is other friends waiting for him still. The party is going on and he really would like to go there.

a.If The ship nurse doesn´t interrupt his action, A. will go to disco.

b. If the ship nurse does interrupt and ask something from the friend, for example patient´s name, medication , personal ID, preinformation etc. A. will stay there and ask questions. You know patient name, wallet with papers is in Viktors`s pocket. No medication. Only alcohol, no drugs or other medication with alcohol. A. does not know Viktor´s the allergies or diseases. Or relatives.

STEP 2. Patient should be transferred to medical cabin. He could sit on wheelchair or if the crew members will transfer him by lifting, he will be really nicely, no aggressive, like sleeping all the time. Breaths 10. Normal lung sounds.

a.If The ship nurse doesn´t interrupt his action to go diaco , A. will go to disco.

b. If the ship nurse does interrupt and ask Aleksander to come to ship nurse´s office too, A. will go there still.

STEP 3. Vital signs monitored now. He sleeps still. GCS 12-13. Not oriented, pupils both ok, movement only to pain, not answering or speaking. Participant should be able to recognize fluid loss and manage an iv access. Breaths 8-10. Normal lung sounds.

Aleksander will be there, but during the measurement asks still, that could he go back to disco.

TMAS doctor if needed

If ship nurse call to doctor, listen first the situation based on ISBAR.

Finally You could ask, if the patient has fallen down in stairs, is there some bruises or something? GCS situation more specific. Drugs? No evacuation if there is now nursing diagnosis, that some other problems is still in process, for example some kind of head injury etc.

Preinformation for those Who are going to simulator:

Patient examination ABCDE with equipment onboard (Bag 1 and 2). In corridor or near the info desk.

Patient monitoring in ship Nurse´s office with available equipment.

Mobile phone if needed, contact to TMAS doctor

Nursing documentation paper, if needed

If You need more crew members to help, You can call.

Iv. canyl:

a. Pretend that you will put this, but say the procedures in voice, So that everybody will hear that. (real patient)
b. Put it to “fake” hand

Information to observators:

If the shipnurse in charge would like to have more “hands” to this case, You will be the other crew**.**

Tips for Briefing after simulation

- **Follow the objectives in this scenario**
- know how to do the patient examination based on ABCDE, know what vital sign monitoring in this situation (alcohol poisoning) means, How to check and treat fluid imbalance
- Communication with patient and his friend
- Communication and leadership with other crew members, if these are available

Nursing procedures

- Procedures as a professional way, ABCDE, Patient treatment after vomiting, asepsis, patient transfer and monitoring, Iv.canyl and fluid therapy, patient position in a recovery position

Co-operation, management and leadership

- Co-operation in team : What kind of roles? Who is the leader in this case?
- Speech? Eye contact? Nonverbalic communication
- Reporting by ISBAR to other crew members, Communication with patient and his friend, Communication onboard and ship to shore.

Teachers roles during simulation Teacher 1: Follow specific the situation and medical procedures Teacher 2: Follow specific communication between ship nurses and crew members, and communication between patient and his friend	Teachers 1&2 – debriefing afterwards	

Life savers

Director in this simulation could say TIMEOUT, so everybody know that Simulation scenario is over.

Participants in simulator can say TIMEOUT too, if they don`t know how to act professionally in this situation.

Ending criterias

Patient examination ABCDE, Nausea and vomiting treatment, Patient transferring to ship nurse office, Vital signs monitoring, Intravenous access, Intravenous fluid infusion, Patient positioning in a recovery position, medical communication from ship to shore

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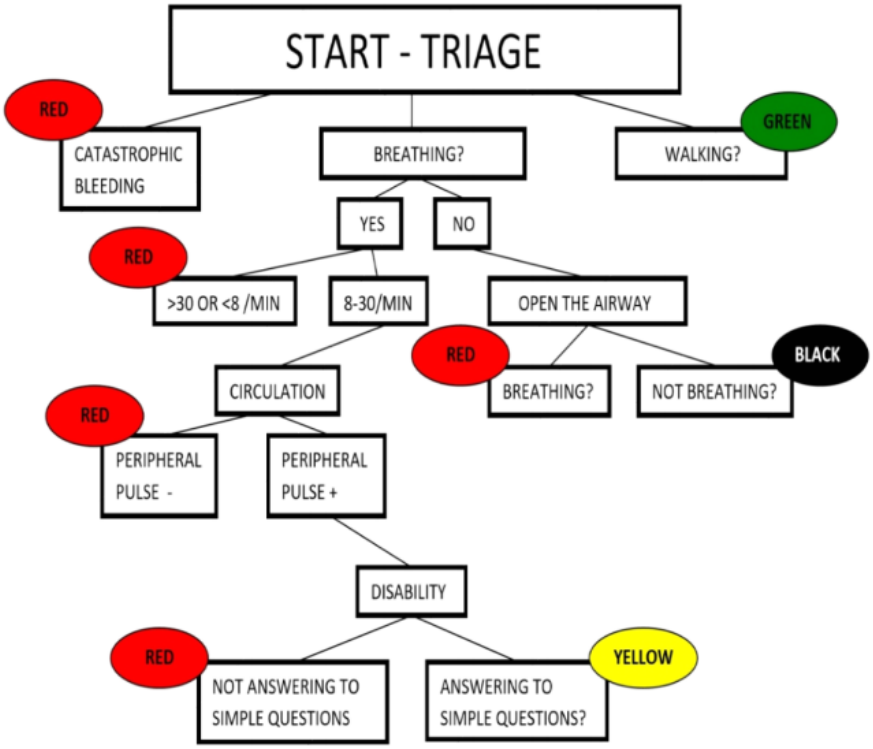
Example from simulation exercise:

Simulation from Cardiovascular diseases - Līga Kārkliņa in cabin with hypertensive crisis. Students will learn how to gather anamnesis, recognize symptoms and correct hypertensive crisis with available medication on board. Also educate patient about personal medication usage.

Example from pre-task:

Pre-task in Cardiovascular diseases – students will have to read lecture materials (presentations) first to gather information. Pre-task is formed as a list of symptoms and students have to find out what cardiovascular disease can the symptoms belong to according to the information given in the presentations. Pre-task also gives opportunity for discussion between students and between students and teacher.

Use Triage, primary and secondary evaluation (Ojuva & Lindgren 2018)



Ojuva & Lindgren 2017

	Primary evaluation
C	- **Catastrophic bleeding** → Stem the blood flow. - Pain on cervical spine? Injury mechanism? Patient's level of consciousness reduced? → Stabilize cervical spine.
A	- Check the patient's airway. Is the patient responding? - If the patient is unconscious → Open patient's airway (insert oropharyngeal airway if needed). Remove possible vomit and foreign bodies from pharynx. - If **no airflow** → Start CPR.
B	- Is the patient responding: normally in sentences or in singular words? - Look for signs of cyanosis. - Respiratory rate approximately **> 30 or < 8** → Critical patient. - Use of the accessory muscles of respiration?
C	- Feel the peripheral pulse. **Lack of peripheral pulse** → Critical patient. - Inspect the patient's skin: warm, dry, sweating, cold?
D	- Is the patient: conscious, responding, having a seizure? - If the patient is not responding to voice, does he/she respond to pain? - If the patient is **unresponsive to pain** → Critical patient.

	Secondary evaluation
A	- Is the patient's airway still compromised? → Make sure the patient's airway stays open with available equipment (tracheal intubation, supraglottic airway).
B	- Measure patient's oxygen saturation and count the respiratory rate. - Listen to the patient's breath souds. - Is the chest expansion equal on both sides? → Palpate the patient's chest.
C	- Measure the patient's blood pressure and pulse rate. - Inspect the patient's peripheries (skin color and temperature). - Assess the state of the external jugular veins.
D	- Count the patient's GCS score. Does the patient seem oriented or desoriented? Examine the pupils (size, reaction to light). - Check the functionality of the patient's arms and legs (sense of touch, weakness)
E	- Expose the patient's body as necessary to find all injuries. - Systematically check the patients whole body for signs of injury. - Measure the patient's blood glucose and temperature. - Minimise heat loss.

ISBAR

I **Identify**	identify self; name position, location and who you are talking to Identify patient: name, age, sex, location	
S **Situation**	State purpose "The reason I am calling is…."	
		Eg. "This is urgent because the patient is bleeding and BP under 100 mmHg
B **Background**	Tell the story Current problem of the patient	
	Relevant history, Relevant examination Relevant test result Management	If urgent Relevant vital signs current management
A **Assessment**	State what you think is going on	
	Eg. patient has fiber and I can not find the infection	Urgent: Patient is hypovolemic and GCS is getting down

	State request	
R **Request**	Eg. you opinion about the test we should run	Urgent We need help urgently

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