SØFARTSSTYRELSEN

First Aid for the Person in charge of Medical Care on board Ships

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MARITIME LIFE SUPPORT
-On every occasion

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3. Edition, Version 3
October 2012
ISBN: 87-7454-283-4

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Preface

This first aid booklet is specifically targeted the person in charge of medical care at sea and forming a supplement for the authorized Danish medical manual.

The booklet is based on modern international principles of treatment, where the vital functions are controlled in order of priority. We have called this Maritime Life Support (MLS). The MLS-book is divided into a part about accidents and a part about diseases. The book describes the treatment both at the site and in the ship's hospital as well as the cooperation with Radio Medical Denmark (RMD).

Cardiopulmonary resuscitation (CPR) accordance with current international guidelines are describes, and the use of defibrillator are involved.

Subjects of special interest for seafarers such as hygiene, Radio Medical, guidelines for medicine on board and malaria are also involved.

In addition are general first aid topics with MLS focus and a little basic knowledge of anatomy, breathing, circulation and level of consciousness added.

Introduction

The term first aid has been defined in various ways through the times.

Contrary to the "regular" first aid provider ashore, the the person in charge of medical care follows the doctor´s prescription directly and has the qualifications to use the equipment on board the ship.

The combination of the person in charge of medical care at sea and the doctor ashore makes the system unique. This will in the following be specified.

Responsibility and Competence

The person in charge of medical care is obligated to follow a set of ethical rules such as loyalty and professionalism and he must also keep the pledge of secrecy in connection with the patient. It is of the utmost importance that the responsibility and qualifications in connection with the job as the person in charge of medical care are clearly defined, also concerning the cooperation with Radio Medical.

The doctor makes a prescription that the person in charge of medical care follows and as long this division of responsibility is observed, the doctor is always responsible for the treatment.

MLS – Maritime Life Support

First aid principles for the person in charge of medical care

Maritime Life Support, in short MLS, is the title of the new first aid principles in this pamphlet. MLS is a combination of first aid principles, the existing equipment on board, the competences of the person in charge of medical care and the consultation with RMD ashore.

MLS must be provided in every situation where the person in charge of medical care is in action.

Naturally, the person in charge of medical care´s role in an acute and severe situation is very different from his role in a minor injury, formerly known as banality. The use of MLS will always ensure a uniform first aid procedure. The person in charge of medical care and the Radio Medical share a common grounding.

The nuances between MLS regarding illness and MLS regarding accidents will be described later and 3 examples of MLS in practice will be given.

MLS - the holistic understanding

1. Safety

The person in charge of medical care must first and foremost survey the damage. He must consider the safety in the area and the situation on the site of the accident.

The person in charge of medical care must ensure that he is not

injured. If the site of the accident remains unsafe, everybody should stay clear of the site until e.g. the fire extinction is over. To ensure that the injured person is not subjected to additional harm is of course of utmost importance. Can ABCDE (see page 10) take place on the site of the accident? The person in charge of medical care must in any dangerous situation evacuate the patient to a safe area before commencing treatment.

2. Situation

The situation on the site of the accident may seem chaotic and it is not always easy to imagine the previous events.

The person in charge of medical care must survey the damage by observing the “scene”, speaking to witnesses and also finding out how many people where involved in the accident. This information gives the person in charge of medical care a clue about the accident; if e.g. the accident involved energy such as a fall from a ladder, a blow, an injury where one has been stuck between something extremely heavy or if the injured person collapsed on the spot.

The extent of the accident determines the subsequent treatment on board the ship and the consultation with Radio Medical Denmark. It is the person in charge of medical care´s responsibility/job to use the resources on board that will help the patient. Often several people on board have the qualifications to provide first aid and medical treatment and this should be welcomed.

ABCDE and Secondary Problems

ABCDE are the new first aid procedures for use in case of accidents and illness. They lay down a standardized procedure for control of breathing, circulation, consciousness et cetera.

This method where Airways, Breathing, Circulation, Disability, Expose – (ABCDE) are assessed, helps the person in charge of medical care by using familiar procedures but in a more systematic and prioritized way.

ABCDE can be used in connection with any first aid as the actions (ABCDE) give the person in charge of medical care a quick survey of the patient´s condition. Furthermore, it is of great help in the communication with Radio Medical.

Radio Medical is very interested in early contact in case of injury or illness and in acute situations the satellite telephone is ideal.

Here information concluded on the basis of ABCDE is reported, where after a plan for further treatment is specified.

Treatment in "Sickbay"

Not all ships have a sickbay/hospital on board, where patients can receive medical treatment, but the most important thing in this connection is that equipment and medication are within reach. We know that the bridge or tables in the mess are used in medical treatment which of course only means that the person in charge of medical care must organize his equipment and medication in an alternative way.

Treatment in sickbay/hospital involves a reassessment of the ill/injured patient´s condition using ABCDE and subsequent follow-up on information for the consultation with Radio Medical.

The Radio Medical Record is the written document used as a guideline for the information that generally must be gathered in case of illness and accidents, but it must not hinder the communication with Radio Medical. There is never a wrong time to contact Radio Medical, but it is very important that concrete and objective data is communicated during the first consultation.

The secondary problems are the problems dealt with once the life threatening condition subsides.

Follow-up on previous actions e.g. if there is flow in the oxygen cylinder, if the drip is working, if the dressings need to be changed, cleansing of minor wounds, follow-up on psychological first aid and the basic care of the patient. Specific procedures will be performed after consultation with Radio Medical and decisions on further treatment/evacuation are made (see the Medical Manual).

Cardiopulmonary Resuscitation

Cardiopulmonary resuscitation or resuscitation on board ships follows the guidelines of the Danish Counsel for Resuscitation (www.genoplivning.dk).

Cardiopulmonary resuscitation is an important factor in survival after heart failure. It is hard work and it is therefore recommended that the person who performs cardiopulmonary resuscitation is replaced every 2 minutes. Studies also shows that the quality of cardiopulmonary resuscitation decreases after 1,5 - 3 minutes of compression. The change must be planned and happen without interruptions, and it is the very quality of cardiopulmonary resuscitation and use of a heart starter that increases the chances of survival after heart failure.

Heart Starter on board Danish Ships

Heart starters gain more and more access in Danish society. This is also the case in maritime affairs, even though the Danish Maritime Authority does not require heart starters by law at the present time. As heart starters are recommended for passenger ships and several shipping businesses acquire these, information nd user instructions must be given.

It is emphasized that a heart starter in combination with cardiopulmonary resuscitation offers a better possibility for resuscitation but the distance to the nearest hospital and the ship´s navigational area are of significant importance in connection with survival. The most important thing is to evacuate the ill or injured patient as soon as possible.

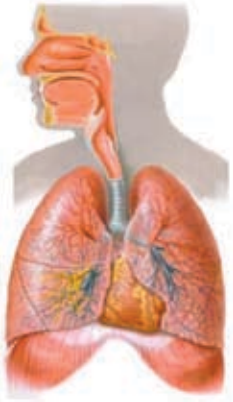
Most heart starters come with user instructions and maintenance directions. If the heart starter is carried on board, it must be used along with CPR in case of cardiac arrest.

Basic Information

With the basic information about regular/irregular breathing, circulatory and level of consciousness, the person in charge of medical care is quickly able to determine if a crew member needs help. As breathing, circulatory and consciousness are vital bodily functions, a short repetition of these is given below.

Breathing and Shortness of Breath

The breathing ensures that the lungs are filled with air and bring oxygen to the blood stream and the red blood vessels via the bronchi's and alveoli´s and at the same time dispose of CO^2 via expiration. This is an automatic process controlled by the breathing centre in the elongated spinal cord, and mechanically by means of the diaphragm and rib muscles. Adults breathe approximately 12-16 times per minute and children breathe twice as much. The breathing may become irregular due to a number of different reasons but most often it stabilizes itself quickly.



Shortness of breath has a significant impact on the body and the cells´ function and survival. Especially brain cells are vulnerable and react quickly to lack of oxygen.

If there is no breathing, the person in charge of medical care must either blow into the mouth or ventilate with a ventilation bag and mask. If the breathing is either very slow or very fast, the brain may not have enough oxygen. This affects the patient´s consciousness and he must therefore have supplementary oxygen.

Heart Trouble and Circulatory disturbance

The circulation consists of the heart, arteries and veins which provide oxygen and energy to the body´s cells via the blood. During rest, the heart beats approximately 60-80 times per minute and the arteries lead the oxidized blood to the capillaries/ cells and liberate the oxygen. The arteries pulsate in step with the heart beats and therefore bleed severely in case of a leakage. On the other hand, blood runs calmly through the veins that transport CO^2 and other waste products which under less and less pressure are brought back to the heart and returned to the lungs.

Circulatory disturbance may be caused by different reasons but especially bleedings or lack of pressure in the circulatory may cause the body severe problems. The cells play a vital part for the sustenance of life. If the bleeding is not controlled or the pressure is not stabilized quickly, the body will be affected. The pulse will rise and the skin will turn pale when blood runs from the area. Bluish skin indicates insufficient oxidation and possible cold and clammy skin indicate poor blood circulation.

Consciousness and Unconsciousness

Consciousness is the brain´s response when the 2 before-mentioned systems are functioning normally. Brain cells are the body´s most sensitive cells and if they are not oxidized and soaked with a sufficient amount of oxygen and blood, the level of consciousness drops. If the brain´s functions shut down, the body´s functions will also shut down as the brain is the superior operating system. Therefore it is once again stressed that the person in charge of medical care´s primary task is to secure free airways. The blood must circulate in the body if an ill or injured patient is to survive.

The level of consciousness is an expression of the brain´s condition and an indicator for content of the injury. The level of consciousness is examined- standardized- under ABCDE – Disability, where the brain´s consciousness is categorized according to 4 levels of consciousness

1) **Consciousness; reacts normally, aware of time, place and personal data.**
2) **Falls asleep; responds to speech and touch**
3) **Seems unconscious but responds to pain**
4) **Unconscious; no response to pain**

Different situations, such as accidents and illness, may lead to unconsciousness.

The body is not necessarily in a critical state, but if an unconscious person is seen from a distance, he appears lifeless. Every muscle in his body is relaxed and there is a risk that the tongue will drop to the back of the mouth and block the airways. If the patient is left without supervision, he must be placed in a recovery position.

Recovery position

Procedures

In the following section, MLS, CPR and a number of topics are described and defined for use as a reference book e.g. in sickbay and as general background information in case of accidents and illness on board. Also, 3 examples of MLS in practice are given.

We have divided MLS in two sections, accidents and illness, since these two naturally require different actions when handling the ill or the injured patient.

The procedures are basically similar as the principles of ABCDE, wich first and foremost deal with life-saving issues, thereafter minor injuries, and in collaboration with Radio Medical, the final treatment.

MLS accident: The cover gives an overview of the upcoming actions which will be specified on the following pages. The cover can be used as a to-do-list, laminated and carried in the mobile equipment.

MLS illness: The cover gives an overview of the upcoming actions which will be specified on the following pages.

CPR: Revised outlined cardiopulmonary resuscitation for children and adults

MLS in practice: 3 examples of MLS in practice.

Radio Medical - Definition and cooperation with the person in charge of medical care

Medicine chest - Legislation, content and organizing

Hygiene - Infection spreading circle, hand hygiene and general principles on hygiene

Malaria - Addendum to the Danish malaria strategy

First aid: Selected parts of first aid as a supplement and help for the person in charge of medical care.

Maritime Life Support Accident

Stop the Accident

What happened?

MLS - Accident

Stop the Accident	What happened? Quick survey • Is the site of the accident safe for the medical officer and the injured person? • Is the injured person conscious and alert? • Emergency evacuation?
Airways	• Inline -stabilization – the position of the head is secured • Secure free airways - if needed use tongue depressor • Place a cervical collar • Give oxygen
Breathing	• Assess breathing quality
Circulation	• Examine capillary response • Do you feel a pulse and with which quality • Skin colour and temperature • Check for haemorrhage • Place a venous needle and drip • Reassess ABC (in case of complications)
Disability	• Examine and assess level of consciousness • Examine pupil reaction to light • Assess if treatment can continue at the site of the accident
Expose	• Top-to-Toe examination • Fixation in the stretcher • Transfer to sickbay
Sickbay	• Reassess ABC • Keep a record and monitor the patient objectively – and first consultation with Radio Medical • Continue observation and secondary treatment • Follow Radio Medical´s prescription.

Stop the Accident

What happened?	When the medical examiner arrives at the site of the accident, the following is assessed: • What happened? • Where did it happen? • How many are injured?
Secure the site of the accident	Before providing first aid, make sure that the patient and tha medical examiner are safe from: • The climate e.g. cold weather or heat with a subsequent danger of heatstroke? • High sea and subsequent danger of MOB?. • Fire that spreads? • Danger of inhaling toxic smoke/chemicals? • Danger of a crash?
Emergency evacuation	If the patient and medical examiner are in danger, an emergency evacuation must take place immediately before further treatment. Methods are for example: • Forearm hold • Individual hold • Two-person The medical examiner puts on gloves before being in contact with the patient. He shouts at the patient to see if he is conscious and alert: •”Where does it hurt?”

Airway

Inline stabilization	First of all, the head is held manually. The body is placed in a ”strait line” on the back
Secure free airways	Examine mouth and throat: • Jaw lift-> Place both hands around the jaw bone and press this forward. This grip is ideal if a patient is unconscious and his tongue hinders free airways. • Place a tongue depressor if the patient is unconscious. • Use mechanical suction in case of vomit, phlegm and blood in mouth and throat
Cervical collar	A cervical collar is placed: In case of suspicion or uncertainty about the accident, fall, injury where one is stuck between something extremely heavy and other accidents where a severe force or external influence cause the accident
Oxygen mask	Give oxygen immediately hereafter: 9 liters/min with mask. Ventilation bag with a mask: 15 l./min. flow

Breathing

Breathing quality	Expose the chest- lift the shirt or cut it off. • **Observe** if the chest rises and falls • **Listen** if the patient has shortness of breath or if his breathing is normal (listen to the patient´s voice) • **Feel** on the cheek to check if the patient exhales • Assess breathing frequency and depth (fast/shallow, slow and deep, normal) • In case of B-problems, examine the chest for injuries and note these for use in later treatment • This examination must not take more than 10 seconds

Circulation

Capillary response	Put brief pressure on the patient´s nail (it turns white under the nail) and observe how long it takes before it turns pink again. If it takes more than 2 seconds, it is a sign of circulatory disturbances.
Pulse	Observe the quality of the pulse: Feel the neck, groin or wrist to check for a pulse. Is it slow/fast/strong/weak/irregular/regular (do not count for more than 1 minute at this stage).
Skin colour	Observe the skin colour and temperature. • Colour: Pale, blush, reddish, yellow. • Temperature: Cold, warm, perspiring, cold sweats
Observe if there are haemorrhages	Observe if there are haemorrhages: Blood pulses out of the artery. Place a ”finger in the wound”, lift the bleeding area and dress the wound. Blood runs from the vein (same procedure as in Arterial hemorrhages)
Placement of venous needle	**WHEN** the patient is has pale, bluish skin, fast and shallow breathing, weak pulse and capillary response >2seconds, a venous needle is placed and infusion is set up. **Important in case of infusion:** 1l. NaCl. –slow drip: 20 – 30 drops/minute
Reassess ABC **RM**	If the patient´s general condition/level of consciousness changes, reassess the following: • Free airways • Oxygen-flow intact • Capillary response, pulse and quality of this • Skin colour and temperature • Are bleedings and wounds under control • Does the venous needle work and is the drip running Aventually phone contact with Radio Medical

Disability

Level of consciousness	Examine and assess the patient´s level of consciousness from the following: Is the patient: 1. Awake, alert and well informed? 2. Is the patient´s consciousness affected even though he reacts to speech? 3. Unconscious but reacts to pain? 4. Unconscious with no reaction to pain?
Pupil reaction	Examine the patient´s pupils with light. Direct the light source towards one eye and observe the reaction on both sides. Repeat on the opposite eye. Observe the following: • The pupils´ shape and size • Round or oval/dilated or the size of a pin head • Do the pupils respond to light – one eye or both? • Are the pupils of the same size?

Expose

Top-to-Toe examination	Do a top-to-toe examination before placing the patient in the stretcher. Cut the clothes, so the medical examiner it better able to examine the patient, *(see next page)*
Transfer to sickbay	Transfer the patient with great care of neck and back. There are different ways of doing this: Pull in the longitudinal direction, lift or log roll onto a back¬board. Assess which move is right for your patient. When fixating the patient to a back-board or a stretcher, secure the patient in the following order: chest, pelvis and head. Keep legs apart e.g. with a folded blanket, where after arms and legs are secured with gaffe-tape. Wrap the patient in a hypothermia blanket/ordinary blanket. Place oxygen and infusion set with the patient.

Top-to-Toe examination

1. Examine the head; examine the skull and face to see if there are any bumps, blows or wounds. Examine eyes, ears, nose and mouth to see if there are any bleedings or fluid.
2. Examine the back of the head and neck; examine if there are any deformities or soreness. Observe if there are any traces of blood on the gloves.
3. Examine the chest; using both hands, feel the right and left sides on the front and back of the chest (use log roll to examine the back). Press lightly on both sides of the chest to examine if there is direct or indirect pain and stability; focus on pain wounds and soreness.
4. Examine the abdomen; feel if the abdomen is hard or soft with attention to internal injuries.
5. Examine the pelvis; place a hand on both sides of the pelvis. Press lightly to examine if there is any direct or indirect pain.
6. Examine the arms and legs; feel and observe if there are any injuries, wounds or soreness.
7. Examine the back; this examination can be performed in connection with a roll on the side or when the patient is moved onto a stretcher.

Fixing a patient to a backboard **should** be done as follows:

- Chest fixed with belts in cross position
- Pelvis fixed with belts in cross position
- Legs fixed with duct tape at upper legs, shins and feet. Place a rolled blancket between the legs
- Arms fixed to the body with duct tape
- Head fixes at the end with either backboard´s own equipment or duct tape

Sickbay

Reassess ABC	The patient arrives at sickbay and is installed. ABC is reassessed right away and possible changes in the patient´s condition is registered and relieved. ***The secured patient remains secured until Radio Medical gives permission to do otherwise.***
Contact Radio Medical	If possible, phone contact Radio Medical in an acute situation and/or e-mail when you have concrete data about the patient´s condition. Keep a record and monitor the patient objectively. Describe: What happened? (Background) How did it happen? When did it happen? Which actions have been performed until now? Objective monitoring: • Count breathing frequency longer than 1 minute. Normal breathing frequency for adults: 12-16/minute • Blood pressure measurement • Count pulse beats longer than 1 minute. Normal resting pulse for adults: 60-80 beats/ minute • Examine capillary response • Examine pupil reaction

Maritime Life Support Illness

Survey the Site

Stop Deterioration

MLS – Illness

Stop deterioration

What happened?	The medical examiner puts on gloves before being in contact with the patient. He shouts at the patient to see if he is conscious and alert: •"Where does it hurt?" When the medical examiner arrives at the site of the accident, the following is assessed: • What happened? • Where did it happen • What caused the situation?
Secure the site	Before the medical examiner provides first aid, are the patient and medical examiner safe from: • the climate e.g. cold weather or heat with a subsequent danger of heatstroke? • High sea and subsequent danger of MOB? • fire that spreads? • danger of inhaling toxic smoke/chemicals? • danger of a crash?
Emergency evacuation	If the patient and medical examiner are in danger, an emergency evacuation must take place immediately before further treatment. Methods are for example: • forearm hold • individual hold • two-person Australian lift/"the Throne" • the Crab method

Airway

Placement	Consider which position is most suitable for the patient; alleviating dorsal position, on the side in foetal position, sitting or according to the patient´s wish
Secure free airways	Examine mouth and throat: • In case of unconsciousness: Jaw lift-> Place both hands around the jaw bone and press this forward. This grip is ideal if the patient is unconscious and his tongue hinders free airways. • Place a tongue depressor if the patient is uncoscious. • Use mechanical suction in case of vomit, phlegm and blood in mouth and throat.
Oxygen	Give oxygen immediately hereafter: Slightly affected respiration: • 1 – 6 l/min form a nasal cannula. Severely affected breathing: • 9 l/min. with mask • 15 l/min. flow with ventilation back

Breathing

Breathing quality	**In case of unconsciousness:** Expose the chest- lift the shirt • **Observe**- if the chest rises and falls • **Listen** - if the patient has shortness of breath or if his breathing is normal (listen to the patient´s voice) • **Feel** - on the cheek to check if the patient exhales Assess breathing frequency(same procedure as if the patient was conscious, see below)
Secure free airways	**Is the patient awake:** • Assess breathing frequency and depth (fast/shallow, slow and deep, normal, listen to the patient´s voice) **This examination must not take more than 10 seconds**

Circulation

Capillary response	Put brief pressure on the patient´s nail (it turns white under the nail) and observe how long it takes before it turns pink again. If it takes more than 2 seconds, it is a sign of circulatory disturbances.
Pulse	Observe the quality of the pulse: Feel the neck, groin or wrist to check for a pulse. Is it slow/fast/strong/weak/irregular/regular (do not count for more than 1 minute at this stage).
Skin colour	Observe the skin colour and temperature. • Colour: Pale, blush, reddish, yellow. • Temperature: Cold, warm, perspiring, cold sweats
Placement of venous needle	Is the patient pale with bluish skin, fast and shallow breathing, weak pulse and capillary response >2seconds • Place a venous needle and start an infusion set. **Important in case of infusion:** • 1l. NaCl. –slow drip: 20 - 30 drops/minute

Reassess ABC	If the patient´s general condition changes, reassess the following: • Free airways? • Oxygen-flow intact? • Respiration quality? • Capillary response, pulse and quality of these? • Skin colour and temperature? • Are bleedings and wounds under control? • Does the venous needle work and is the drip running?
RM	• Eventually phone contact with Radio Medical

Disability

Level of consciousness	Examine and assess the patient´s level of consciousness from the following: Is the patient: 1. Awake, alert and well informed? 2. Is the patient´s consciousness affected even though he reacts to speech? 3. Unconscious but reacts to pain? 4. Unconscious with no reaction to pain?

Pupil reaction	Examine the patient´s pupils with light. Direct the light source towards one eye and observe the response on both sides. Repeat on the opposite eye. Observe the following: • The pupils´ shape and size • round or oval /dilated or the size of a pin head • do they react to light– one eye or both • are the pupils the same size

Expose/Sickbay/on the site of the accident

Transfer to sickbay?	Examine in accordance with the patient´s information. Avoid transfer if treatment on the scene is possible without causing inconvenience for the patient and medical examiner.If the patient is transferred on a stretcher; lift or log roll onto a back-board; assess which move is most suitable for your patient.
Reassess ABCD	If the patient has been transferred to sickbay, reassess ABCD to begin with and register and relieve possible changes in the patient´s condition.
Contact Radio Medical	Contact Radio Medical by telephone or fax when you have additional concrete data on the patient´s condition, when a record has been made and the objective observations and examinations are completed.Describe in record. • What happened? (history) • Which actions have been performed until now **Objective observations:** • Count breathing frequency longer than 1 minute. Normal adult breathing frequency: 12-16/min. • Blood pressure measurement • Count pulse beats more than 1 min. Normal adult resting pulse: 60-80 beats/minute • Examine capillary response
Continue Observation and Treatment	Reassess ABCD frequently and perform basic first aid: • Patient positioning; place the patient in a comfortable position and make sure he is not too cold or too hot • Psychological first aid – Inform the patient and speak in a calm voice
Contact Radio Medical	• Wait for further prescriptions from Radio Medical and prepare, if necessary for an evacuation.

Cardiopulmonary Resuscitation

-Children and Adults

CPR for children age 0 - 1 y.o.a.

Check consciousness
• Speak, shake (not too rough)

If unconscious
• Call for help and an emergency bag
• Place the child so that its shoulders and head are supported by your forearm
• Hold the head horizontally to secure free airways
• Observe, feel and listen for breathing and vital signs for no more than 10 seconds

No breathing – vital signs: Begin CPR
• Give 30 compressions with two fingers on the sternum on the line between the nipples. Pressure depth: 4 cm or 1/3 of chest height
• Compression frecuency: 100 til max. 120 per minute
• Blow twice (light blows into the mouth and nose) for no more than 5 seconds
• Continue CPR in series of 30:2 until obvious vital signs appear

If breathing begins
• Bring the child to sickbay and contact Radio Medical

Cough and movement
• Continue to blow into the mouth and nose until breathing begins

The most common causes for heart failure in children from 0-1 y.o.a. are foreign objects in the throat.

*Obstructed breathing/ tap on the back**

30 compressions with 2 fingers on the line between the nipples – pressure depth 4 cm

Blow into mouth and nose to make the chest rise and fall

Position the child in a and dorsal position to secure to secure free airways

* If a foreign body has entered the throat, give 5 thumps on the back and 5 compressions on the sternum until the foreign body shows

CPR for children aged 1 -> 8 years

Check consciousness
• Speak, shake (not too rough)

If unconscious
• Call for help and an emergency bag
• Secure free airways
• Bend the head back and lift up the chin
• Observe, feel and listen for breathing and vital signs for no more than 10 seconds

No breathing – vital signs: Begin CPR
• Give 30 compressions with 1 hand on the middle of the chest; Pressure depth: 5 cm or 1/3 of chest height
• Compression frecuency: 100 til max. 120 per minute
• Blow twice (into the mouth and nose)
• Continue CPR in series of 30:2 until obvious vital signs appear
• Bring the child to sickbay and consult Radio Medical
• Continue to blow until breathing begins

If breathing begins
• Bring the child to sickbay and contact Radio Medical

Cough and movement
• Continue to blow until breathing begins

Bend the head a little; observe, listen and feel

Give 30 compressions on the middle of the chest; press with one hand. Pressure depth 5 cm

Blow twice effectively through mouth so chest rise and falls

CPR for patients older than 8 years (adults)

Check consciousness
• Speak, shake

If unconscious
• Call for help and an emergency bag
• Secure free airways
• Bend the head back and lift up the chin
• Observe, feel and listen for breathing and vital signs for no more than 10 seconds

Begin cardiac massage and blow in case there is no breathing and vital signs
• Expose the chest
• Give 30 compressions and blow twice effectively using mouth to mouth or ventilation bag 15 l/minute. Pressure depth must be 5-6 cm
• Compression frecuency: 100 til max. 120 per minute
• If there is a heart starter on board, give CPR until the electrodes are on the patient. Then follow the machine´s directions
• Continue CPR and contact Radio Medical
• Crew members take turns in the CPR. Recomended every 2 min.

Vital signs but irregular breathing
• Continue to blow with ventilation bag or mouth to mouth until breathing is stabilized

If you have to leave the patient
• Place the patient in a recovery position

NB.
• For juniors and adults, the pressure spot is on the middle of the sternum
• A heart starter can only be used with child-pads on juniors an must not be used on children under the age of 1 year

Expose the chest and give 30 compressions on the middle of the sternum; pressure depth 5-6 cm

Blow twice into to mouth or use a ventilation bag with 15 l oxygen/minute

Maritime Life Support

Examples of MLS in practice

Examples of MLS

Background: MLS - accident

A 24 year old ship assistant contacts the bridge. He has a laceration in the back of his head and a lot of blood is dripping from a 3 cm long wound. The assistant is not feeling well; he is dizzy and a bit confused, has a headache, is pale and out of breath when he tells about the accident.

He is working when he slips on the deck. He does not have time to relieve the fall with his hands- hits part of his back, loin and back of his head on the bitt astern. He experiences a brief loss of consciousness and does not recall what he did minutes before the fall.

This small coaster does not have a sickbay on board. Therefore treatment will be performed where the person in charge of medical care has placed a cabinet for medication and equipment. As the person in charge of medical care is the person in charge of the bridge, extra crew is called to duty so he can be relieved

The person in charge of medical care´s actions:

Stop the accident/emergency evacuation:

As the ship assistant has walked away from the site of the accident, the accident is considered over. To stop the bleeding, the assistant holds a work glove to the wound. He is calmly placed in a lying position while the person in charge of medical care produces his mobile medical equipment.

ABCDE

A. Injury or blows to the head/back of the head or neck; Support the head as much as you can and place a cervical collar on the assistant. As he is conscious and able to breathe freely, only slightly out of breath, and speak about the incident, the person in charge of medical care concludes that the airways are free and a nasal cannula with a flow of 6 l/min. is placed.

B. The breathing is faster and slightly more shallow than normal. The chest is exposed to see if there are any visible injuries but none are apparent.

C. Pulse measurement, capillary response, skin temperature. The pulse is fast but quite powerful. Good capillary response and normal skin temperature; the face is still a bit pale, though. A quick examination of the patient´s body does not reveal any other bleedings. A venous needle is not placed.

D. Good pupil contraction on both eyes. During the entire examination, the level of consciousness has been 1on the scale and therefore no further checks of consciousness are made.

E. Examination from Top-to-Toe. Follow the guidelines; the head is examined and despite the cervical collar, the wound on the back of the head is easy to describe: ½ cm deep, 4 cm long and it only bleeds a little. The wound is cleansed with chloride hexidine and a clean dressing is applied. The overall is gently removed to expose the body. The back of the chest is tender to the touch, corresponding to the bottom rib on the right side. The examination is completed with a roll onto the side to check the back; on the lower part of the loin/above the buttock are red marks. If there are no changes in the patient's breathing, circulatory and level of consciousness, the examination will be concluded by monitoring breathing frequency per minute, pulse and blood pressure.

All data is entered in the Radio Medical record and if possible, Radio Medical is contacted by phone. The ship receives the following prescription:

- Observe the assistant for signs of a possible concussion. If his condition deteriorates, contact Radio Medical.
- Describe the chest injury precisely; bent or broken ribs and observe the breathing quality. Continue oxygen 3 l. per minute.
- Shave, cleanse, apply a local anesthetic with lidocaine gel and sew the wound in the scalp. (Use the medical book).
- Contact Radio Medical again after 4 hours or if the assistant´s condition changes.
- The medical prescription is sent to the ship via fax/e-mail.

2. Example of MLS

Background: MLS – illness
During a paint job on deck, a 56 year old ship assistant suffers an indisposition and passes out. A colleague sees the event and rushes to help. He tries in vain to contact the assistant and calls for help but no one hears him. After determining that the ship assistant is breathing, he positions him in a recovery position where after he gets help.

When the person in charge of medical care reaches the ship assistant, he finds him lying on his stomach on deck. He looks pale and has shortness of breath. The sea is calm and the outdoor temperature is approximately 25 degrees Celsius.

The person in charge of medical care´s actions:
The person in charge of medical care has brought the first mate from the bridge where skipper is now on duty. The mobile resuscitation equipment is quickly fetched on the deck office.

Stop deterioration/emergency evacuation:
The person in charge of medical care surveys the scene. There I no immediate explanation for the situation and there does not seem to be any danger in providing treatment here at the present time.

ABCDE:

A. As the assistant remains lifeless on deck, he is quickly positioned on his back. Free airways are secured via a jaw lift and a tongue depressor is placed. Meanwhile, the first mate has prepared the oxygen- Hudson mask with 9L/min. –and he has also alerted a stretcher team.

B. The assistant´s breathing is still irregular and slightly shallow. The overall is opened to expose the chest. Here the first estimate of the assistant's condition is verified, and there are no signs of strokes or anything else that may obstruct the breathing.

C. It is estimated that the assistant´s pulse is fast but weak. Slow capillary response > 5sec. His face is still pale and the skin on his body feels moist and warm. On the basis of the gathered information, a venous needle is placed along with 1l. NaCl. with slow drip of 20-30 drops per min.

D. The person in charge of medical care also checks the assistant's pupil reaction. Right eye shows a good contraction but the contraction on the left eye is weak. During the entire examination, the assistant´s level of consciousness has been 4 but the person in charge of medical care still checks if there is any pain response. The assistant shows no response to pain.

The stretcher team arrives and it is decided that the assistant must be transferred to sickbay from where Radio Medical is contacted.

E. In sickbay, a reassessment of ABCD is made before Radio Medical is contacted by telephone. The first mate who is also a trained person in charge of medical care begins monitoring the

assistant´s concrete data which means breathing frequency per minute, pulse per minute and blood pressure. The Radio Medical record is followed categorically. The oxygen cylinder from the mobile resuscitation equipment is replaced by a 10 liter cylinder in sickbay. Later, this information will be sent to Radio Medical by fax but is reported at the present time by telephone.

As the assistant remains unconscious after ½ hour and the person in charge of medical care estimates his condition as critical, the doctor orders an evacuation after consultation with Radio Medical. The coastguard will be arriving in an hour and the assistant is prepped for transport. It is checked if the oxygen flow and oxygen cylinder are working, if the drip is running slowly as prescribed and if there are any changes in the assistant's condition. Continuously, consciousness, breathing, pulse, blood pressure and pupil reaction are monitored every ½ hour and entered into the Radio Medical record.

The colleague who found the assistant explains what he saw on deck. Information on the assistant´s general well-being on board, possible medication and possible signs of discomfort prior to the incident is forwarded to Radio Medical. As the assistant is evacuated, the crew speaks about the incident. The good colleague is not left in the lurch.

3. Example of MLS

Background; accident causing a minor injury
During cooking, the chef cuts himself on the finger pad of the thumb and it bleeds heavily. The chef holds a dishcloth to the wound and contacts the bridge immediately to receive treatment from the person in charge of medical care.

The person in charge of medical care´s actions:
Stop the accident/emergency evacuation.
A. When the chef arrives at the bridge, he looks a little pale but seems otherwise unaffected by the situation. The person in charge of medical care asks the chef to take a seat and explain what has happened. Slightly out of breath he speaks about how annoyed the situation makes him while the person in charge of medical care notes that the chef's airways are free.

B. The chef´s breathing is normal; he does not have shortness of breath or a sensation of pressure in the chest.

C. The pulse and capillary response are normal, the skin feels dry and warm but the chef´s face is still a little pale.
The person in charge of medical care asks if the chef has cut himself anywhere else, but he has not. The blood loss is assessed as minimal and a venous needle is not placed.

D. During the entire examination, the chef´s consciousness has been 1: awake, alert and well oriented. Pupil reaction is not checked.
E. The person in charge of medical care observes the wound and notes that it is deep and must be examined and assessed in consultation with Radio Medical.

In sick bay, the wound is cleansed with chloride hexidine. It turns out that it is approximately 5 cm long and 1 cm deep. The person in charge of medical care applies a clean dressing to the wound and contacts Radio Medical.

Radio Medical gives the following prescription:
• The wound must be sewn- cleansed, local anesthesia with

lidocaine but no adrenaline and sewn (see the procedure in the medical book)
- Find out quickly when the chef had his last tetanus vaccine.
- The following days, the wound is observed to see if there is heat, redness, swelling or pain (signs of infection).

Radio Medical Denmark (RMD)

RMD is established with the purpose of assisting Danish ships in the treatment of sick and injured persons on board. The overall principal is that the person in charge of medical care, whom acts as the doctor's eyes, ears hands reports to RMD. RMD diagnoses and prescribe the necessary treatment, observation or medication.

The arrangement is free for Danish ships (commercial vessels). RMD has for many years been physical located at hospital in Esbjerg. RMD is manned around the clock by a permanent staff of doctors who have knowledge of the training and qualifications of the person in charge of medical care on board.

The requests for RMD relates to all types of diseases, injuries and accidents. There are approx. 1200 requests a year, and most of them deals with injury, infections, skin problems and stomach problems.

The request form has change over the years, as the phone is used increasingly as first contact, and many requests are supplemented with pictures.

The person in charge of medical care

The prerequisite for becoming the person in charge of medical care on board a Danish flag ship is, that you have a Danish STCW course as medical officer which must be updated with new knowledge every fifth year.

If you have a foreign STCW course (or a Danish STCW course which is more that 10 years old) you must have a Danish supplementary course, before you can work as a person in charge of medical care. It is necessary to know the Danish concept/medicine chest/books/manuals etc.

When a crew member or a passenger address the person in charge of medical care (becomes ill or injured), he start treat-

ing the person, provided that he follows the arranged records" (writes down), and provided that he in contact with RMD according to an established set of rules.

Arranged records

As a minimum the person in charge of medical care must **write down** the following:

- Who is treated (position/age/gender)
- When is the request/treatment happened (date/time)
- Problem (reason for the request)
- Treatment (what has been done, decision on no treatment is also treatment)
- Medicine (does the patient take any kind of medicine – what medicine)
- Allergy (is the patient allergic to something – especially medicine)

If given antipyretic medicine (3.1 paracetamol) there should be a temperature measurement prior to administration.

Contact to RMD

The person in charge of medical care decides whether the first contact should be made by telephone or by e-mail, it depends on how urgent the request is.

There are established guidelines for cases in which the person in charge of medical care ought to contacted RMD.

RMD ought to be contacted in any case where there is a need for a medical assessment of the condition.

Contact RMD if the following is observed in the patient:

- Any abnormal state of mind – the patient behaves strange/ inexplicable/different
- Any abnormal condition that affects the consciousness, breathing, pulse or blood pressure which need to be dealt with – if the patient isn't fully awake or lucid, not breathing normally and does not have a normal circulation, there is something wrong
- Fever disease where the temperature is ≥ 39 C° - at a temperature of 39 C° or more the condition can develop into a life threatening situation
- Fever disease where the disease persists beyond 2-3 days - fever with duration over several days must be dealt with by a doctor.
- Any condition with pain in the chest or abdomen – this may be a sign of severe conditions that requires evacuation.

Furthermore RMD is always contacted

- Before administering the medication check the guidance and record over content in the ships medicine chest, if there stands "Seek consultation with Radio Medical" – there is a case of prescribed medication, which only may be given after contact with a doctor
- Before the following procedure: injection of medication and infusion of fluid, stitching of wound, treatment of fractures and large wounds and emptying of the urinary bladder – all procedures that are potentially dangerous at the wrong approach
- If you have any doubts, get help where expertise is – ask RMD.

Radio Medical records

When contacting RMD the Radio Medical records (RMO) is filled out, all Danish vessels must have it on board. RMO is expected soon to be available in an electronic version in addition to the printed.

The records contain both guidance and schemas, which can be

use for reporting on the patient's condition over a period, in a manageable form.

Cooperation between the person in charge of medical care and Radio Medical Denmark

As soon as RMD is contacted, RMD takes over the legal responsibility for the patient's treatment.
The person in charge of medical care and RMD agree together on how the patient should be observed and treated.

It is RMD who is responsible for the medical officer understands what is expected of him including what treatment/medicine is to be given, and what observations is to be made, if necessary with referrers to the procedures in the medical manual or guidance in the control document. Medication will always be accompanied by appropriate number of medication in the control document.

Ship, RMD and SOK

RMD is responsible for the medical treatment, while the captain is responsible for the ship and the crew. Together they agree on how a possible disembarkation will take place. If an evacuation is current RMD contacts Admiral Danish Fleet (SOK), which contacts other/foreign authorities whom are responsible for the evacuation. The authority, whom is responsible for the evacuation, contacts subsequent the ship and arrange the details.

After contact with med Radio Medical

The patient is being observed at the intervals agreed with RMD, and changes are communicated to RMD. Any prescriptions are carried out. If there is any doubt about observations, prescriptions of medication or procedure, contact RMD again.

Evacuation from Danish passenger ships in Danish waters

Rescue crew who picks up the patient need to know exactly what treatment is given so far, and what instructions RMD has given. Information on treatment and observations can with advantage be written down on "Handling over to Emergency Personnel form" which can be downloaded from the Danish Maritime Authority's website: www.dma.dk/MaritimeHealth/Sider/Publications.aspx

Medicine chests

For the person in charge of medical care and Radio Medical it has great safety importance that there is a good overview of the medicine and medical equipment, regarding of cooperation on the treatment of the sick.

At the same time there are legal requirements for storage of medicine in Danish land based legislation – and hereby also in the laws at sea.

The medicine chest

Almost all Danish vessels have required medicine chest. Depending on the area of operation the chest must have the size A, B or C.
Area of operation is described in notice A, chapter IX B[1].

Depending on the function of the ship there is complement medicine chest A, B and C. The supplement types CR, P, M, G and F refers to the following:

CR	P	M	G	F
Rescue fleets and -boats	Passenger ships	MOB- boat	War gas	Coastrescue vessels

The supplement types are describe in the notice A, chapter IX B[2].

[1]: Technical Regulation A, chapter IX B "Examination, Treatment and ship medicine" – regulation 3.
[2]: Technical Regulation A, chapter IX B "Examination, Treatment and ship medicine" – regulation 4.

The medicine chests A, B, C and supplement type P and CR are published as separate publications. The supplement types M. G and F are annexed in notice A, chapter IX B.

Underlying basis for the Danish medicine chests content and structure is the European Directive 92/29/EEC:"Minimum record for safety and health requirements for improved medical treatment on board ships".

Organizing the medicine chest

The organization of the medicine chest in cupboards, drawers and bags are no requirements.

Regardless of where the medicine chest is placed, it is recommended that the person in charge of medical care organize after group number, as in the "Record, control document and user instruction".

The medicine must be provided with a label that informs the group number corresponding to the number system in "Record, control document and user manual".
Medical equipment must be stored dry and dark, and it should not be stored near chlorine.

The explanation of the system in the medicine chest is described in the guidance for Record, control document and user instruction" for respectively medicine chest A, B, C and the supplement chests CR and P.

Statutory basis for storage of medicine and medical equipment can be found in Technical record notice A, chapter IX B: "Examination, treatment and ship medicine".

Placing the medicine chest
There are no requirements for the location of the medicine chest.
If there is a demand for a hospital on board, it would be natural to place the medicine and medical equipment in the hospital/ treatment room.

If there is no demand for a hospital on board, it would be natural to place the medicine chest in the immediate vicinity of where you intend to carry out the treatment.

The medicine chest must according to the National Board of Health's "Medicine cabin announcement" be looked up. This rule does also apply at sea.

Some countries have rules stating that some of the medicine must be kept in the safe. The medicine there in these countries must be kept in the safe, are typically found on a list with "Controlled Drugs". In such cases the responsible of the ship must take contact to the local agent and ask for the provision of this list.

Acute mobile resuscitation equipment
The Danish Maritime Authority has established rules for oxygen and the mobile resuscitation equipment in the existing notice A, chapter IX B, appendix 1. Beside this you can pack first aid equipment and medicines for first aid together with the mobile resuscitation equipment. There is drafted proposals for the packaging of the mobile resuscitation equipment on www.dma.dk under the tab "Maritime Health"and then under the tab "Publications".

Exemption for other medicaments?
In cases where it is not possible to meet the requirement for the content of medicine and medical equipment in the medicine chest, can you apply for exemption.

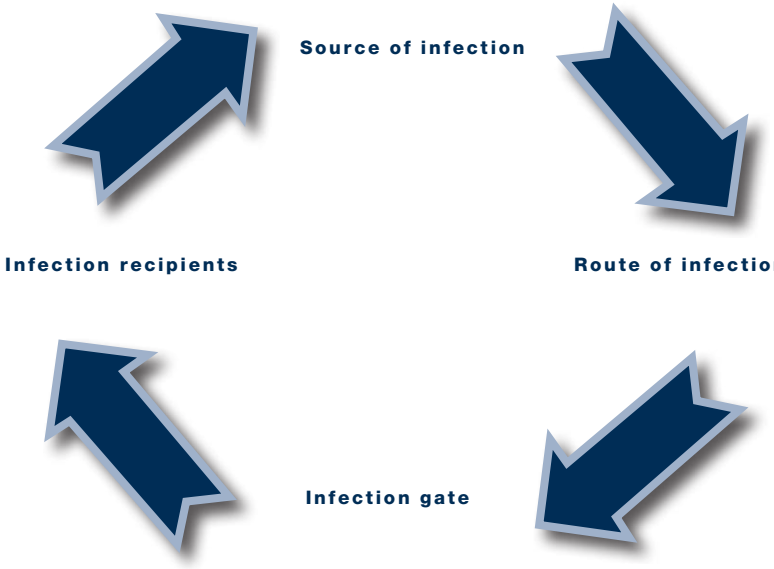
The exemption application may for example be required upon delivery of medicaments that do not contain the correct medicament or correct strength. It may also be necessary to apply for exemption to have other medicines on board. An example could be vaccine against outbreaks of diseases.

The procedure for "Exemption for other medicine" is available at www.dma.dk under the tab "Maritime Health".

Hygiene

Good hygiene is to prevent the disease from spreading!
To help preventing the spread of disease on board, you can use the “Infection circle”. It describes the factors that affect transfer of pathogenic microorganisms from one person to another.
Each arrow in the chain of infection can be broken by performing **hand hygiene**.

Infection Circle



The source of infection may be bacteria, viruses, fungi (microorganisms) from sick people, urine and faeces, blood, body fluids and wounds.
Route of infection may be our hands, handles, taps and the equipment we use for treatment (e.g. Instruments for sewing). It can also be airborne infection (through coughing and sneezing) or through prick on contaminated needles.

Infection gate can be all the body’s natural openings and wounds.
Infection recipients may be all of us! Particularly susceptible are burn patients, sick and elderly people.

Infection occurs most often in one of these four ways:

- Through contact – when either touching each other or toughing an object with microorganisms on, which is passed on to another person
- Through the air – by coughing and sneezing, where microorganisms are blown into the air
- Through food – through food or water with microorganisms in
- Through blood – at pricks or cutting such as an accident with needles.

Why should you wash your hands?

It is really quite simple:
Hand hygiene is about:

- Preventing transmission to clean areas
- Preventing the spread from unclean areas.

Hands are our most important tools:

- It is with them we welcome you, examine, treat, nourish, soothe and express our care. But it is also the hands that give the infection to yourself and others!

Did you know, that 60 % of the population has the bacteria staphylococcus on their skin – without getting sick of it? But you can transfer the bacteria for example to a patient’s wound – and thus give him an infection. It is among other things therefore we ensure hand hygiene before we nurse and treat patients!

When should you wash hands?
It is therefore essential to remove microorganisms from your hands before being passed on to other people or surfaces. Therefore you must always perform hand hygiene when you work in a clean area and when you just have worked in an unclean area e.g.:

- Before and after all patient contact
- Before you get equipment in the medicine chest and before handling clean equipment
- Before and after you inspect, clean, sew or dress a wound
- Before and after catheterisation
- Before and after placing of vein canula and other injections
- After handling soiled utensils
- After using gloves
- Before and after handling medicaments
- Before and after handling food

What is hand hygiene?

- To wash hands and wrists with water and soap
- To disinfect the hands and wrists with 11.1 chlorhexidine/ ethanol 0,5 % / 85 %
- To use gloves when there is a risk of contact with the patient's body fluids (vomit, urine, faeces, blood, wound secretion, saliva, etc.). The gloves are in the medicine chest, they are clean – but not sterile! They are used to protect the person in charge of medical care and helpers against possible infection for the patient.

How should you wash your hands?

- Make your hands wet under the tap
- Apply soap
- Distribute the soap on the palm, between the fingers, on each finger, the back of the hand and around the wrists

- Wash for 15 seconds – is any – use nail brush
- Thoroughly rinse the soap of
- Dry the hands on paper towel and close the tap with the paper

Cleaning the instruments
To prevent infection the instrument are cleaned properly before and after use.

A lot of the equipment in the medicine chest is disposable equipment – and is used only once then disposed. It is known to be packed in sterile packs.
A.3 oxygen masks and **F.5** tongue depressor is not sterile packed, but must also be disposed after use.

The instruments used for sewing wounds are reusable instruments, and they are not packaged sterile. They shoul be cleaned before and after use.

Immediately before use:
The instruments are located in **D.5** metal box with a lid.

- Pour the instruments with med **11.1** chlorhexidine /ethanol 0,5 % / 85 %, so they are covered with fluid
- Put on gloves
- Take the instrument from the metal box and place them on a **C.7** sterile cover
- Wait 30 seconds before use

After end treatment:

- Rinse the instruments and metal box under running cool water
- Wash the instruments and metal box thoroughly in water and

detergent with a brush – remove all visible dirt
- Rinse the instruments and metal box thoroughly for soap residue
- Place the instruments in the metal box and pour them with **11.1** chlorhexidine/ethanol 0, 5 % / 85 % in **10 minutes**
- Wipe the instruments and metal box with a clean and lint-free cloth. The instruments are stored in a metal box in the medicine chest.

Hygiene in sick bay/ship hospital

Did you know that microorganisms can lice in a speck of dust for up to a year – and still be infectious? That is why we clean up!
Therefore there also must be cleaned in sick bay/ship's hospital and in the medicine chest at regular intervals, when there is visible contaminated and/or dust.

Cleaning sick bay/ship's hospital and in the medicine chest/medicine cabinet is done with water and soap.

In areas that are contaminated with blood, vomit, faeces, urine and other body fluids, the cleaning is performed with water and soap, disinfection with **1.1** chlorhexidine/ethanol 0, 5 % / 85 %.

In infectious diseases such as meningitis, tuberculoses or severe diarrhea seek individual advice from Radio Medical Denmark.

Did you know, that if you drop something ont the floor, it is considered unclean and must be discarded or cleaned? Sterile packed disposable equipment cannot be cleaned!

Source: www.ssi.dk

Malaria Prevention in the Danish Merchant Fleet - Addendum to the Danish malaria strategy

Facts:

To this day Malaria is a serious illness. Every year millions are infected and die from the disease.

Through this addendum to the Malaria guideline on board, the Danish Maritime Authority and Statens Serum Institut (SSI) urge the merchant fleet to follow the given regulation on malaria prevention and treatment, but underline additional preventative measures which can reduce malaria incidents in the Danish merchant fleet.

What can be done differently?

1. Risk assessment: Ship destination?
2. Crew information: Before, during and after!
3. Mechanical and medical prevention
4. Procedures in case of illness
5. General and individual advice.

Trough the next pages the procedures will be unfolded as a guide. On board considerations, when entering malaria areas, can be of tremendous importance and crucial to crewmembers.

1. Risk assessment

- Ship destination?

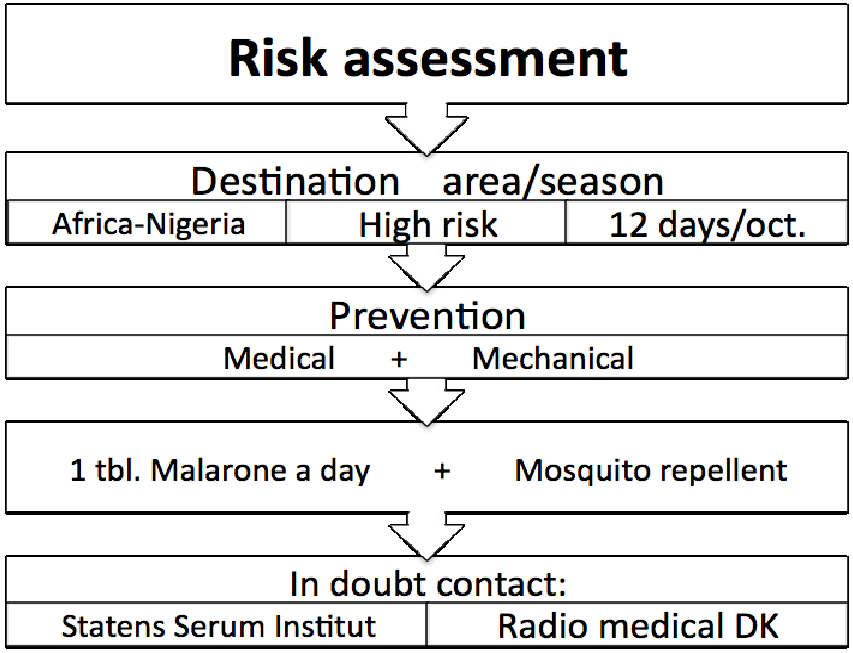
Before every voyage to malaria areas, the responsible officers should consider the following 5 risk parameters:
- Destination and trade area: Risk evaluation: No risk, risk or high risk of malaria. According to the Danish Statens Serum institut-SSI(see homepage adress on page 70)

- Duration: Number of days/time of the year
- Where is the ship placed: roadstead in the harbor, along quay, up rivers or in and out of ports
- Crew on shore: morning, midday or evenings.
- Advice from SSI/Radio Medical if in doubt of medical prevention

Towards the above mentioned considerations an example on the next page shows how to perform a **Risk assessment**.

A documented Risk form should initiate both mechanical and medical prevention, which is recommended on board Danish ships.

If doubts occur, information and help is a joined matter between company and ship management.



Risk Form	
Destination/area	Nigeria->High Risk Malaria
Duration/number of days **Season**	12 days October
Where is the ship placed	Along quay
Crew risk/ information mechanical prevention	On shore morning, midday and evenings
Initiated medical prevention in coop with SSI/RMD?	Tbl. Malarone 1-2 days before, during and after according to the malaria guideline/medicine chest

2. Information to the crew

Before arrival – 1-2 days before arrival in malaria areas, the crew must be informed of which precautions to take. Any clarification concerning mechanical/medical prevention and how to do the practical things will be handled by the person in charge of medical care on board. A security meeting is recommended.

During the stay – in the period the ship stays in the area with any level of risks, there is a risk of infection. It is very important that medical prevention is administered at the same time every day. Keep focus on the mechanical prevention day and night. Be aware of each other and do only take the medicine which is handed out.

Leaving the area – in the period after the ship has left the malaria area, the administration of medical prevention is just as important as during the stay. Follow the recommendation of the person in charge of medical care on board. Because of the incubation period, it is even more important to keep an eye on each other and not to accept fever and headache. It might be **malaria**.

3. Mechanical og medical prevention

The person in charge of medical care on board is familiar with malaria prevention, both mechanical and medical. The medicine chest is not, according to the law, equipped with mosquito repellents, but it has to be underlined that mechanical prevention will create a significant impact on the fight against malaria. Specialists state that mechanical prevention can reduce the risk of getting the infection by 50%.

It is recommended that the ship management train the crew in mechanical prevention and inform about the expectation concerning mosquito repellents on board. Secondly, posters can be very helpful when arriving to the area.

Medical prevention should be decided upon from the result of the risk assessment and possible advice from Radio Medical or SSI. By experience seafarers seems to be reluctant in taking unnecessary medical prevention, but with the risk or high risk of getting malaria, SSI and the DMA will always recommend medical prevention.

4. Procedures in case of illness

Should a crewmember get ill and the corporation with Radio Medical leads to malaria suspicion, the following procedures will take place:

- Early examination of the person's blood
  Use the"ready-set" available on board and you will detect the deadly malaria within 15 minutes.
- Prepare a thick blood specimen for consignment to the SSI. (The blood should dry out and be placed in the fridge.)
- Examination of the urine -> for blood
- General examination of the person. The temperature will independently go up and down according to the malaria species.

- Depending on the previous medical history and ongoing results, Radio Medical will give the proper advice towards the right treatment.
- Can the ill person continue the journey or must he be evacuated as soon as possible? Radio Medical will take responsibility.

Read the exact recommendations in the Danish malaria strategy.

5. General and individual advice

According to registrations on malaria in Denmark, nearly all cases come from Africa.
Recommendations towards medical prevention when sailing other regions than Africa, seek individual advice and information from the SSI.
The risk of getting malaria depends on the parasites resistance to medicine and also

1) Which countries and harbours the ship enters
2) How far the ship goes up rivers
3) How long the stay in the area lasts
4) Is it wet or dry season

Remember to perform the risk assessment

Individual advice

The purpose of individual advice is to secure ships sailing in malaria risk areas. Both to give the right preventative medical advice and to balance a sound suggestion between:

1) The risk of getting life threatening malaria
2) The risk of resistance towards the medicine
3) The risk of getting ill of side effects

The ship management or the person in charge of medical care on board can always seek individual advice on the following address:

Statens Serum Institut
Parasitologisk Afdeling
Artillerivej 5
DK 2300 København S,

Phone: 3268326895

E-mail: hvn@ssi.dk or lav@ssi.dk
Back-up -> pea@ssi.dk

World map on malaria „Rejser og smitsomme sygdomme“ on the Statens Serum Institute homepage. (only in Danish)

www.ssi.dk/Vaccination/

Center of Disease Control and Prevention –CDC -> alternatively to the Danish SSI:

http://www.cdc.gov/malaria/malaria_worldwide/impact.html

Maritime Life Support

First aid procudures

Center of Maritime Health Service

Arterial Bleeding

General information

In case of an arterial bleeding, blood is pumped out in tact with the heartbeats. The severe blood loss may be life threatening. Venous bleedings may seem less dramatic but may be serious. Venous bleedings are stopped the same way arterial bleedings are controlled; see below.

Symptoms

- Bleeding from the wound in question.
- Possibly, affected consciousness, breathing and circulation.

Action

- Lay the patient down and lift the bleeding wound as high as possible.
- Press your fingers directly into or under the wound. Bleeding control in case of severe bleedings: Put pressure in the armpit or groin with your fist.

Perform life-saving first aid ABC under C:

- Hold a compress dressing to the bleeding area and fixate with sterile gauze bandage. Bind the corners of the bandage in front of the wound.
- If blood seeps through the bandage, place a new one.
- If the bleeding still has not stopped, apply a pressure bandage. This is done by applying a firm object on top of the compress and fixate with gauze bandage.

Contact Radio Medical and follow the prescription

Hold the pressure area

Apply pressure bandage

Abdominal Lesions, open/closed

General information

Injuries brought on by a violent, external force may cause open or closed abdominal lesions. There is a danger that this leads to organ system failure, and bleeding can be life threatening in the acute phase.

Symptoms:

In case of **open** lesions, pain and blood loss are the primary symptoms. As the patient looses blood, the breathing frequency increases, the skin is pale and the consciousness may be affected.

Action:

- Check the bandage again.
- Place the patient on his back with the knees slightly bent.
- Loosen tight clothing and belt.
- Psychological first aid in case the patient is conscious.
- Follow Radio Medical´s prescription.
- Be prepared for Cardiopulmonary resuscitation in case of unconsciousness (see page 42)

Symptoms

In case of **closed** lesions, pain is the primary symptom. What and which organs are injured are uncertain. If there is bleeding in the abdomen, the abdominal muscles may be hard and blue and red bruises may indicate where the injury is. Breathing, circulatory and consciousness are affected.

Action:

- Place the patient on his back with the knees slightly bent or in a position the patient finds comfortable. On the side with the legs up and under the body may ease the pain.
- Loosen tight clothing and belt
- Psychological first aid

Contact Radio Medical and follow the prescription

Stroke in the abdomen

Dress the open lesion

Place the patient in an alleviating abdominal position

Drowning

General information

The causes of drowning are many. An obvious cause is hypothermia. If a person is drowning it is important to rescue him from the water immediately and provide first aid.

Symptoms:

- Unconsciousness.
- No breathing.
- Pale, cold and lifeless.
- No perceptible pulse.
- No vital signs.

Action:

- When the person in charge of medical care has rescues the person from the water;
  - (A) Secure free airways
  - (B) Observe, listen and feel
  - If there are no obvious vital signs, begin Heart – Lung-Rescue (see page 42).

Contact Radio Medical and follow the prescription

Rescue the person and perform cardiopulmonary resuscitation ashore

Center of Maritime Health Service

Foreign Body in the Airways and Strangulation

General information

Strangulation can occur if a foreign body has obstructed the airways or the nose and mouth are blocked e.g. in connection with an accident or if the patient has been subjected to violence towards the neck.

Symptoms:

- Bluish lips, ears and wing of the nose due to lack of oxygen.
- Unconsciousness .
- In the worst case scenario: respiratory failure

When removing the foreign body from adults and children from the age of 1, take these actions:

- If possible, bend the patient forward e.g. over a table or chair.
- Give 1 thump on the back between the shoulder blades with a flat, slightly hollow hand.
- If this does not work, repeat the thump up to 5 times.

Heimlich method:

If the 5 thumps have no effect, use the Heimlich method:

- Stand behind the patient.
- Place your hand just below the sternum.
- Clench the hand farthest in and press hard inwards and upwards at the same time.
- Continue until the foreign body comes out or the patient falls unconscious.

NB. The patient must be attended by a doctor afterwards.

In case of unconsciousness:

- Perform life-saving first aid ABC and possibly Cardiopulmonary resuscitation.

Contact Radio Medical and follow the prescription

"Thump" method

Heimlich method

Burns

General information

Burns cause a rise in skin cells´ metabolism and increase the cells´ need for oxygen. Due to the reduced blood supply, the cells perish. In connection with a fire, warm air in mouth, throat and airways is a serious problem.

Symptoms:

In case of limited burns

- Limited burns are 2 degree burns that are limited to a smaller skin area. On the skin, there are blisters containing fluid. Pain.

In case of severe burns

- Severe burns are burns that cover a large part of the body. Consciousness, breathing and circulatory may be affected. Pain.
- Circular burns on arms/legs.

Action in case of limited burns

- Rinse with water immediately on the burnt area.
- Remove loose clothing while you rinse. If clothing sticks to the skin, leave it and only cut it free around the burnt area. Blisters must not be punctured.
- Remove all jewelry/watches that may squeeze the skin if there is swelling.
- Avoid rinsing with water where there are no burns to avoid hypothermia. Continue rinsing with temperate/20 degrees warm water until the pain subsides- this may take hours.

Contact Radio Medical and follow the prescription

Action in case of severe burns:

- Perform life-saving first aid ABC.
- Rinse with water immediately on the burnt area.
- Hereafter, perform the above-mentioned procedure.

Rinse immediately

Limited burn

Severe burn

Frostbite

General information

If unprotected parts of the face, nose, ears, hands and feet are exposed to immense cold, it causes a local drop in temperature because the small blood vessels retract to minimize the heat loss. Depending on which temperature the person is in and the duration of his stay in the cold weather, frostbite may spread to large parts of the body.

Symptoms:

- Irritation of the skin.
- Redness around the frostbitten area.
- Skin is cold.
- Skin turns waxy, pale and cold.
- Small blister which may burst.
- Severely reduced sense of touch around the area.
- Numbness.
- Black fingers or toes.
- Gangrene/dead tissue.

Action

- Bring the person in cover to avoid additional frostbite.
- Avoid rubbing the frostbitten area.
- If the frostbite is superficial, which means that the skin can be moved over the joints, the thawing out may begin slowly.
- If the frostbitten area is white, hard and unmovable, the thawing out may begin with water no warmer than 37 degrees

Celsius. This is a very painful process which must take place in consultation with Radio Medical.

Contact Radio Medical and follow the prescription

Skin is cold, pale and waxy

Severely reduced sense of touch/ small blister are formed, which may later burst

Black fingers due to gangrene/ dead tissue

Poisoning

General information

This general information on poisoning may be used in case of any poisoning. The primary goal is to neutralize the harmful substance the person has been subjected to.

Symptoms:

- Irritation of the nervous system: Changes in the level of consciousness, confusion, dizziness, hallucinations, delusions or unconsciousness. Co-ordination difficulty, changes in the muscle tension (possibly cramps) or headache may be symptoms of poisoning.
- Changes in breathing frequency or depth. Irritation of the airways which may cause swelling of the mucous membrane and contraction of the bronchi's.
- Inflammatory conditions in the bronchi's and lung tissue may cause water in the lungs. Affected circulatory. Upset stomach such as nausea/vomit and diarrhoea.

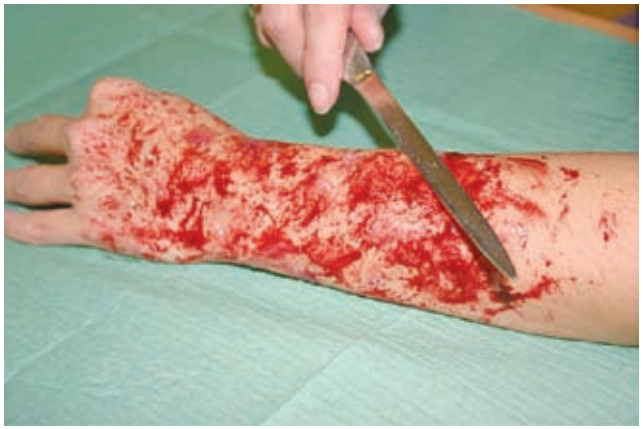
Treatment:

RINSE – RINSE – RINSE

- Rinse, remove, air to neutralize the toxic substance.
- If possible, use a razor/knife to scrape toxic substances from the skin.
- The person in charge of medical care must monitor the patient constantly
  until Radio Medical takes over the treatment.
- What, how much and how long – the influence of the toxic substance is coordinated with Radio Medical.

- Follow the guidelines of MFAG in consultation with Radio Medical.

Contact Radio Medical and follow the prescription



Person has toxic substance removed from arm

Dislocation and Sprain

General information

A severe blow or twist of a joint may lead to a dislocation. A joint is dislocated when it is out of the normal position. A sprain means that the ligaments are sprained and minor blood vessels may be burst.

Symptoms in case of a dislocation:

- Deformity of the joint.
- Swelling and possibly bluish discolouration.
- Severe pain.

Action in case of a dislocation:

Keep calm and possible fixation in the position in which it was found.

Contact Radio Medical and follow the prescription

Symptoms in case of a sprain:

- Swelling and possibly bluish discoloration.
- Pain.

Action in case of a sprain:

RICE·

REST- rest the injured body part and avoid unnecessary activity.

ICE- Place ice on the injury as quickly as possible. There must not be direct contact between the ice and the skin- place a towel or the like in between. The next 3 hours, treat the injury with ice for 20 minutes followed by a 20 min break.

COMPRESSION- when the swelling and pain subsides, place, if possible, a compressing bandage. The bandage must not be too tight and must be removed at night. If the injury is swollen the next day, place a new bandage.

ELEVATION- Keep the injured body part as high as possible and preferably above heart height, as long as there is swelling.

Rest

Ice

Compression/elevation

Heart Diseases

General information

Adults may experience heart diseases suddenly and unexpected during rest or activity. Often, the patient is aware of a high blood pressure and/or other heart problems.

Symptoms in case of a dislocation:

- A feeling of pressure or a weight on the chest.
- A choking sensation around the neck or changed breathing.
- Pain radiation to the arms, jaw, teeth, ear, stomach or between the shoulder blades. Weight sensation, numbness or sleeping sensation in the arm, shoulder, elbow or hand on both sides.
- Gray/pale face, cold and clammy skin

Action:

- Perform life-saving first aid A.B.C for illness.
- If the patient has his own nitroglycerine, administer this.
- Place the patient in a semi-sitting heart position or in a position the patient finds comfortable.
- Loosen clothing and belt.
- Psychological first aid – try to calm the patient.

Contact Radio Medical and follow the prescription

NB. Be prepared to perform Cardiopulmonary resuscitation (see page 35)

Patient with chest pains

Loosen belt and clothing

Patient is placed in a semi-sitting position

Head Trauma

General information

Concussion of the brain

A concussion is a minor injury compared to other brain damages. There are no changes in the brain tissue and the patient usually recovers without permanent ill-effects.

Symptoms:

Dizziness, nausea, bump, swelling, memory loss of the injury, headache, possibly brief unconsciousness (a few minutes).

Action:

- If the patient is conscious, he can be positioned as he wishes. In case the patient is unconscious and the person in charge of medical care has to leave the patient, place him in a recovery position. Place his head high, if possible.
- Monitor pulse, blood pressure and level of consciousness every ½ hour.

Contact Radio Medical and follow the prescription

Fracture of the skull:

A severe blow on the head may cause a fracture of the skull. Generally, the symptoms are the same as the above-mentioned symptoms of a concussion but often more severe.

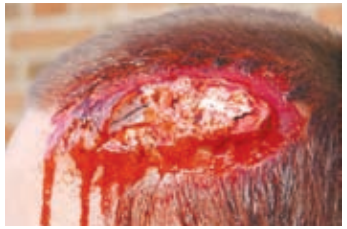
Symptoms:

Wound and bump on the head, bruises and swelling behind the ear, around one or both eyes, fluid or blood from ear or nose, bloodshot eyes (the white in the eyes turns red), crookedness or asymmetry of the head and shape of the face, reduced level of consciousness.

Action:

If the patient is conscious, find a position he feels comfortable with.

In case of unconsciousness, place the patient in a recovery position.



Open fracture of the skull

Blow to the head

Dress the wound and place the patient in a recovery position

Strangulation and Hanging

General information

We use the term strangulation when something is tightened around the neck so oxygen and blood do not reach the brain. The cause may in the worst case scenario be hanging in connection with a suicide attempt.

Symptoms:

- Bluish lips, ears or wing of the nose due to lack of oxygen.
- Unconsciousness.
- Protruding, bloodshot eyes and extravasations on the neck.

Action in case of strangulation/ hanging

- Cut the person free and remove the tight object from the neck.
- Perform ABC and CPR in case of lifelessness

Contact Radio Medical and follow the prescription

Loosen and perform ABC and possibly CPR

Bone Fracture

General information

Strokes, twists or severe bending of a bone may cause a bone fracture. The ends of the fracture may be twisted and cause a deformity. An open fracture occurs if the point of a bone pierces the skin or the skin is scraped on the outside.

Symptoms:

- Pain on the area of the fracture.
- Swelling.
- Possibly, small wounds around the fracture/arteries, veins and nerves may have been cut.
- Possibly, abnormal shape of the bone.
- Possibly, sensation disorder and no pulse under the fracture.
- The patient has heard a crack.

Action

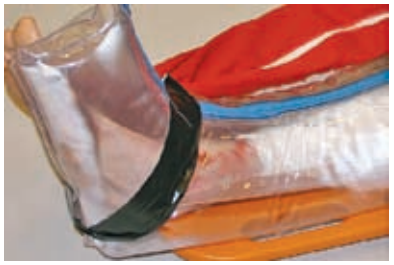
- A closed fracture is supported in the position in which it was found. During transport, position the arm/leg in the normal position and later in an inflatable splint.
- An open fracture is supported in the position in which it was found and a sterile bandage is applied over the fracture. During transport, position the arm/leg in the normal position and later in an inflatable splint.

Contact Radio Medical and follow the prescription

Attention!! The inflatable splint is **only** to be used for transportation. Max. inflated time 45 min.

Open fracture with no circulation

Open fracture/broken skin above the fracture



Closed fracture in an inflatable splint

Patient Positioning

General information on recovery position

Use in case you have to leave the patient, if the patient has unstable breathing and risk of airways blockage due to blood and mucus and in case of unconsciousness.

General information on alleviating dorsal position

Use in case:

- Breathing is hindered by cough, phlegm and the like, and when the patient is not able to sit up.
- In case of chest pains and if the patient is not able to sit up.
- Closed or open abdominal lesion.
- Stomach- and abdominal pain.

General information on dorsal position

Use in case the patient is conscious and alert and has no:

- Life threatening injuries.
- Signs of shock.
- Discomfort or dizziness.
- With bent or stretched legs

General information on abdominal position

Use in case the patient is unconscious and has lesions which hinder a recovery position.

General information on foetal position/lateral position

Use in case the patient has open or closed abdominal lesions and is feeling nausea or discomfort.

Recovery position

Alleviating dorsal position

Abdominal position

Foetal position/lateral position

Ear and Nose Bleed

General information

There can be many reasons for a nose or ear bleed, but they often occur after severe strokes or falls and may be symptoms of a more severe injury (see head trauma). A spontaneous nosebleed may be caused by high blood pressure or if you blow your nose too intense.

Nose

Symptoms:

Blood from one or both nostrils. Possible sensation of blood running backwards down into the throat.

Action:

- Let the patient sit with his head bent forward; hold the nose bridge.
- Cool inside and outside. Offer crushed ice to make the veins in the mouth and nose cavity contract.
- Contact Radio Medical if the bleeding does not stop spontaneously within ½ hour or if the bleeding is severe.
- Psychological first aid.

Ear

Bleeding from the ear rarely happens spontaneously. It may be caused by an inflammation of the middle ear, blasts and stroke to the ear. A blast may split the eardrum and cause subsequent bleeding from the ear.

Symptoms:

Bleeding from the auditory canal.

Action:

- Let the patient sit or lie down with the head placed high.
- Place a gauze meche at the ear to catch the blood.
- Contact Radio Medical if the bleeding does not stop spontaneously within ½ hour or if the bleeding is severe.

Nose bleed. Let the person with the nosebleed hold the bridge of his nose until the bleeding stops

Bleeding from the auditory canal. Place gauze at the ear and let the blood run out of the canal.

Psychological First Aid

General information

Psychological first aid is a continuous process which begins with the first contact. In sickbay or after the life-saving actions, there is often better time and energy to grasp the previous scenario. People have different reactions and therefore demand individual care.

Symptoms:

Common reactions: Scared, anxiety, restlessness, apathy, weeping, hyper activity. At first sight it may seem as if the person has control over the situation where after he or she collapses.

Action:

- Always let the person know what is happening.
- Listen and be honest.
- Try to remain calm no matter how confusing the situation may be.
- Use the time to gather information that will be useful in further treatment. If for examplethe person has not been able to inform you of any allergies or medication, now is the time to write this down.
- Be present and make sure the basic needs are met.
- Find a calm, suitable place to talk.
- A Radio Medical prescription for calming medication may be necessary.

Contact Radio Medical and follow the prescription

Convulsion

General information

Convulsion are often caused by damage to the head, lack of oxygen and sugar for the brain (diabetes), poisoning (also alcohol abstinence). Convulsion are divided into 2 sections below; during and after, as Convulsion rarely come with a warning.

Symptoms:

During:

- Sudden unconsciousness, stiffness of the body followed by intermittent rhythmical movement of arms and legs.
- Breathing may stop, lips turn blue.
- Uncontrolled biting in tongue and lips may happen.
- Uncontrolled urination/defecation.

After:

- Muscles are relaxed, breathing returns to normal, over the course of a several minutes, the person slowly returns to normal. The person may feel confused and does not remember anything from the episode.
- After the seizure the person is often very tired and falls asleep.

Action:
- Support the person and try to cushion the fall.
- Sit by the person´s side, support the head and try to hinder the person from hitting furniture and the like.
- Secure free airways and monitor the breathing.
- Try to loosen tight clothing around the neck.
- When the person regains consciousness, offer him a piece of chocolate or other sugary foods.
- Keep the person under observation as a new seizure may occur.

Contact Radio Medical and follow the prescription

NB: Never try to remove anything from the mouth or insert anything into the mouth before the cramps cease.

Shock

General information

Physiological shock is an acute condition which at best is prevented and relieved. No matter which state of shock the person is suffering, there are preventive elements. At first, the body seeks to mend itself, e.g. pulse and breathing are faster than normal if a person looses blood. These symptoms tell the person in charge of medical care and Radio Medical to perform the life-saving preventive treatment. If the blood pressure drops severely, it may be hard to rectify.

Symptoms:
- Level of consciousness 1-4.
- Possible increase in breathing frequency.
- Pulse may rise.
- Skin may turn pale. Bluish fingers, toes, ear lobes and lips. Reddish in case of allergy. Body temperature may feel cold and clammy.
- Capillary response >2 seconds.
- Blood pressure may drop quickly.
- The patient is anxious /scared.

Action:
- ABC
- Observe if possible dressings are soaked with blood. Generally observe if there are any changes in the patient´s condition.
- Wrap the patient in an aluminum blanket or the like.
- Follow Radio Medical´s prescription.
- Psychological first aid.

Contact Radio Medical and follow the prescription

Neck and Back Injury

General information

Problems with neck and back are not always caused by a stroke or fall but may arise after a wrong twist or lift. These problems are associated with pain but are not life threatening. Consult Radio Medical in the acute phase for a prescription for pain-relieving drugs. In case of neck and back injuries and possible damage of the central nerves, the following symptoms can be seen:

Symptoms:

- Pain and sorerness in neck and back
- Weakness in arms and/or legs
- Numbness or tingling sensation in arms and legs
- Complete or partial paralysis, breathing difficulty or breathing stop

Action:

- Position the patient on the back.
- Support the patient´s head and avoid nerves, the following symptoms can be seen: movement of the body.
- Ask the patient to describe his symptoms.
- Psychological first aid.

Contact Radio Medical and follow the prescription

Chest Injury

General information

Minor chest injuries such as muscle sprains, broken or bent ribs caused by e.g. a stroke, may be more severe than they appear at first glance. In accidents involving acute severe chest lesions such as penetration, fall and or an injury where one is stuck between something extremely heavy, the subsequent treatment primarily deals with the life-saving functions.

Symptoms:

These will mainly relate to the concrete injury but general symptoms are: Breathing difficulty, pain when moving the chest and redness and swelling around the injury. Direct and indirect soreness. Possible hole in the chest with air whistling.

Minor injury/Action:

- Locate the injury via ABC.
- If needed, apply a dressing and position the patient depending on the size of the injury.
- Calm the patient.

Contact Radio Medical and follow the prescription

Severe injury/Action:

- Location of the injury via ABC.
- If needed, apply a valve dressing (see below).
- Apply a dressing; ease the patient´s breathing.
- Position the patient according to the injury, e.g. recovery position on the injured side.
- Calming the patient/psychological first aid.

Contact Radio Medical and follow the prescription

Red/blue bruise on the chest

Valve dressing

Wounds infected with foreign bodies

General information

After accidents caused by e.g. an explosion, stab or a fall, foreign bodies such as metal fragments and glass may remain in skin and muscle tissue. It may bleed from the wounds and there is a great risk of infection of the area.

Symptoms:

- Bleeding from the wound.
- Possibly, affected consciousness, breathing and circulation.

Action:

- Foreign bodies that have entered the head, chest or abdominal cavity must not be removed. Contact R.M. after performing MLS.
- Under C, a compress is placed around the foreign body. This is fixated with gauze or elastic dressing.

Contact Radio Medical and follow the prescription

- Foreign bodies such as metal fragments and glass may be removed. In the acute faze, only what is strictly necessary is cleansed with Chloride Hexidine.
- Bleeding is stopped by following the principles (arterial / venous bleeding).

Contact Radio Medical and follow the prescription

Knife in the back– must not be removed. Stop the bleeding and dress the wound.

Remove glass from the wrist and stop the bleeding.

Support Bandaging

General information

The purpose of a support bandage is to prevent additional swelling and support the joints. Fundamental rules of bandaging:

Each time the bandage is led around, it must cover 2/3 of the previous round, except the 2 fist and last rounds

- The elastic bandage must always be applied in one direction –from within and outwards.
- The bandage must not be so tight that the patient has a tingling sensation in e.g. fingers or toes.

Foot Joint Bandaging

1. Lead the bandage 3 times around the metatarsus. Begin by the knuckles and lead the bandage diagonally up over the back of the foot.

2. Continue diagonally down over the back of the foot until the bandage reaches the ankle joint. The bandage must create a herringbone pattern in a straight line on the back of the hand. Lead the bandage 3 times around and secure with tape.

Elbow Bandaging

Keep the arm slightly bent in a 45 degree angle. Lead the bandage twice around the elbow joint covering the tip of the elbow.

By turn, lead the bandage over and under the joint to create a herringbone pattern on both sides of the elbow joint.

Lead the bandage 3 times around the arm and secure with tape.

Knee Bandaging
Keep the knee slightly bent in a 45 degree angle. Lead the bandage twice around the knee joint covering the knee cap.

By turn, lead the bandage over and under the joint to create a herringbone pattern on both sides of the knee joint.

Lead the bandage 3 times around just below the knee and secure with tape.



Wrist Bandaging
Lead the bandage 3 times around the metacarpus. Begin by the knuckles and lead the bandage diagonally up over the back of the hand.

Continue diagonally down the back of the hand an around the wrist. The bandage must create a herringbone pattern in a straight line on the back of the hand. Finish with 3 times around the wrist and secure with tape.


Mitella/ Arm Sling
Used for support and relief of arm or shoulder.


Thumb Bandaging
Lead the bandage 3 times around the wrist, diagonally up around the thumb and around the tip of the thump.

Lead the bandage diagonally down over the thumb and around the wrist. Continue until the bandage reaches the root of the thumb.

Lead the bandage 12 times around the wrist and secure with tape.

Abdominal Pain and Illness

General information
Abdominal pain and illness are for most person in charge of medical cares a non-specific and difficult condition to address. This change in the common condition must be taken serious and examinations and treatment must not be postponed.

Symptoms:
Abdominal pain is the most common symptom of an abdominal illness. The symptoms vary depending on which organs are involved (see the medical book). The pain can be described in many different ways and can occur on varying times and intervals. The change in the common condition will determine how serious the situation is.

Action:
- Position the patient comfortably.
- Fill out the Radio Medical record if the patient is not acutely ill.
- Psychological first aid.

Consult Radio Medical and follow the prescription

NB.
As a general rule, do not give any painkillers before consulting Radio Medical as painkillers may interfere with uncovering the patient´s symptoms.

Hypothermia

General information
The core temperature drops when the body´s heat production is not able to cover the body´s heat loss. Naturally, time, wind and water temperature decide which symptoms occur. The body temparature is registered based on symptomps
- 35° - 34°: Shivering
- 34° - 30°: weak trembling muscles
- < 30°: Unconscious

Symptoms:
- Shivers/muscle trembling when the temperature drops.
- Pale and bluish skin colour.
- Confusion, muddle-headedness and fatigue which may lead to unconsciousness.
- A body temperature below 28-30 degrees Celsius may lead to cardiac arrest.

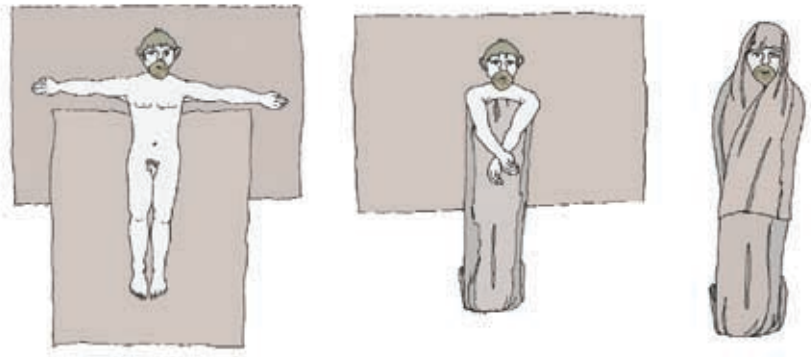
Action:
- Bring the patient in cover or inside.
- Remove wet clothes and wrap the patient in non-heated blankets and possibly an isolating plastic wrap/aluminium foil blanket (see illustration page 98).
- Avoid unnecessary movement of the patient.
- Give warm, sugary beverages.
- Do not rub or massage as it leads to additional loss of body heat.

In case of unconsciousness:
- Give 9l./min. oxygen on mask
- Intensified observation of breathing

• Monitor vital signs
• Begin CPR if there is no breathing or vital signs

When a person is suffering from severe hypothermia, it can be difficult to see if there is breathing and vital signs in general. The patient therefore demands an extra 10 seconds intensified observation to monitor the breathing before possible CPR is performed.

Contact Radio Medical and follow the prescription



Wrap the person suffering from hypothermia in blankets.

Mouth and Tooth Injuries

General information
Bleeding from the mouth can be caused by a bite or cut in the tongue, lip or the inside of the cheek. The cause can be insignificant as well as severe.

Symptoms of bleeding in the mouth:
Bleeding from the mouth´s mucous membrane or the lip. Breathing difficulties due to blood in the throat and subsequent danger of airway blockade; this is rarely seen in the waking state.

Action:
• Let the patient sit with his head leaning forward and to the side of the bleeding.
• Let the blood run out of the mouth. Use suction, if possible.
• Ask the patient to hold gauze to the wound for at least 10 minutes.

Contact Radio Medical if the bleeding does not stop spontaneously.

General information
Below, the focus on knocked out teeth is on bleedings. See other guidelines in the medical book.

Symptoms in case a tooth has been knocked out:
Bleeding from the mouth where the tooth has been knocked out.

Action:
• Rinse the mouth.
• Replace the tooth with a light pressure and hold the tooth down e.g. with a piece of gauze.
• If it is not possible to replace the tooth, keep the tooth in Sodium Chloride (the patient must see a dentist within 1-2 hours if possible).

Consult a dentist and Radio Medical.

Diabetes

General information

When the pancreas partly or completely stops the production of insulin, it leads to diabetes. See symptoms below. First aid in case of diabetes is primarily needed if a diabetic crew member suddenly experiences low blood sugar. It is therefore important that the person in charge of medical care is familiar with this information.

Symptoms in case of low blood sugar:

- Fatigue
- Muscle shivers
- Muddle-headedness
- Irritability
- Sensation of hunger
- Perspiring, cold and clammy skin
- Loss of consciousness

Action:

- Position the patient and depending on his level of consciousness, offer him sugary beverages, a piece of chocolate, orange, small piece of sugar or the like.
- If the patient has a quick response to the sugar, offer him additional sugary beverages/snacks e.g. whole grain bread. Let the patient rest.

Symptoms in case of high blood sugar:

- Heavy thirst, frequent urination, infection.
- Expiration smells sweet/like acetone.
- At a late stage, the skin is warm and dry, fast respiration and pulse, the patient is in a dazed state leading to unconsciousness.

Action in case of unconsciousness:

Secure free airways, contact Radio Medical and follow the prescription.

Contact Radio Medical and follow the prescription

Classification of Burns/Scalding according to the Cause of the Injury

General information

Blisters:

Damaged tissue due to high temperatures.

Action:

- Rinse until the pain stops.
- Do not puncture the blisters. When the fluid runs out and the “protection bubble” bursts, it hurts more than before.
- Dress blisters in the burn area so that they do not burst so easily.
- If the blisters burst, cut off the loose skin.

Contact Radio Medical and follow the prescription

Sunburns

Heavy sun exposure may result in painful, superficial burns.

- Cold, running water will relieve the pain if the extent of the injury is not so big.
- Give water to drink to maintain the fluid balance. In severe cases intravenous NaCl may be necessary

Action:

Contact Radio Medical and follow the prescription

Burns in mouth and throat:

By consuming hot beverages or inhaling steam and smoke, the mouth, throat and lungs may suffer a burn. This may lead to swelling of the mouth and throat which could close off the upper airways.

Action:
- Give cold beverages to relieve the pain of a mouth and throat burn.
- Bring an injured person who has inhaled smoke out into fresh air and supplement with an oxygen mask.

Contact Radio Medical and follow the prescription

Blisters; whole/burst

Sunburn

Electrical burn:
- When an electrical current courses through a body, it damages all tissue on its path. There may be a contact burn where the current enters and exits the body.
- If the current runs through the heart it may lead to cardiac arrest.

Action:
- As soon as the power is switched off, the patient must be given a cooling treatment.
- If the patient has suffered cardiac arrest, perform CPR

Contact Radio Medical and follow the prescription

Chemical burn

Various chemical substances that damage the skin at contact.

Action:
- If the chemicals are in a powder or crystalline form, brush off all loose particles with a cloth.
- Rinse with water until it does not sting anymore.

Contact Radio Medical and follow the prescription

Heatstroke/Sunstroke

General information

The body can be exposed to a rise in temperature after a long stay in a very warm climate. The situation may worsen after hard labor or if the recommended amount of fluid is not consumed.

Heatstroke

occurs when the body is not capable of cooling itself down. When the air and the skin are warm, no temperature regulation takes place, and this leads to a rise in body temperature.

Symptoms:

- Indisposition and headache.
- Fatigue, dizziness.
- Nausea and vomit.
- Abdominal pain and muscle pain.
- Body temperatures of >41 are seen.
- Affected consciousness and cramps.
- The person is warm, moist and red.

Action:

- Move the patient into the shade.
- Offer a beverage, not a cold beverage though.
- If the patient is dressed, remove as much clothing as possible.
- Cool the skin with cold cloths.
- It is a good idea to cool feet joints and wrists as it is important to cool the body down slowly.

Healthy adults with a fully working body temperature regulator seldom suffer sunstroke, but children and elderly people are more likely to suffer sunstroke after a long stay in direct sunlight. The head/skull is superheated; symptoms and actions are the same as with heatstroke.

Contact Radio Medical and follow the prescription

NB. Always observe your fluid balance during stay in a warm climate

Fluid Loss

General information

Different scenarios may lead to fluid loss, but regardless of whether it is a fever, burn, vomit, diarrhoea or dehydration from working in high temperatures, fluid loss can develop into a life threatening condition.

Symptoms:

- Thirst.
- A state of weakness, fatigue.
- Dizziness.
- Reduced perspiration.
- Sparse, dark coloured urine.
- Fast pulse

Symptoms at a later stage:

- Low blood pressure
- Collapse, unconsciousness may occur.

Action:

- Bring the person into the shade.
- Offer water to drink
- In case of shock, NaCl will be given in consultation with Radio Medical.
- Keep a fluid chart.

Contact Radio Medical and follow the prescription

First Aid after Insect Stings and Reptile Bites

Bee and Wasp Stings

General information
Bees and wasps inject a small amount of poison under a person´s skin when they sting. This is often associated with pain and redness on the sting wound, but in the worst case scenario it may cause an acute allergic reaction with redness and swelling of the throat and with a subsequent danger of respiratory failure. This reaction can happen very quickly.

Action:
In case of a non-allergic reaction:
- Remove the bee sting with tweezers.
- Place an insect remover over the sting wound to suck the poison out.
- Wash the wound with clean water and soap.

In case of an allergic reaction:
- Perform ABC.
- Give adrenaline.

Contact Radio Medical and follow the prescription

Spider Bites

General information
Generally, spiders prefer moist places with some shade and therefore like to hunt indoors during the day.

Symptoms:
- On the bite wound, a tingly, slight stinging, burning or severe pain may be felt.
- In some cases, pain does not occur immediately.
- Vesiculation, swelling of the skin due to bleeding in the sub cutis and cramps of the muscles may occur.
- In some cases, tissue death may occur at a later stage.
- The general symptoms are anxiety, a state of weakness, headache, indisposition, perspiration, and dizziness, swelling around the eyes, nausea, in the worst case shortness of breath, dribble, vomit and cramps of the airways. In the worst case, allergic chock.

Action:
- Avoid unnecessary movement to minimize the risk of poison spreading in the body.
- To relieve the pain, ice cubes can be placed on the bite wound.

In case of allergic reaction/chock:

- Perform ABC
- Give Adrenalin

Contact Radio Medical and follow the prescription

Snake Bites

General information

Snakes usually live in areas with high grass, in woods and stony ground and luckily there is only a minimal risk of snake encounters at sea. In the odd chance that there is a snake on board and it bites, symptoms and subsequent action are as follows:

Symptoms:

- On and around the bite wound, there is pain, swelling and discolouration but these symptoms do not necessarily occur immediately after the bite.
- Within the first 10 minutes and few hours after the bite, symptoms such as indisposition, nausea, vomit, headache, dizziness, perspiration, shortness of breath, bleeding, muscle convulsions, confusion, cramps and paralysation, chock, unconsciousness, heart failure and death may occur.

Action:

- Avoid unnecessary movement to minimize the risk of poison spreading in the body.
- If possible, gently wash the bite wound immediately with clean water and soap.

Contact Radio Medical and follow the prescription

Scorpion Stings

General information

Scorpions are nocturnal animals and appear at dusk. They hide in cracks and vegetation and indoors in cupboards, duvets, beds and the like. Most scorpion species are harmless to humans even though the sting can be very painful.

Symptoms:

The classic symptoms of moderate to serious poisoning are:

- Indisposition.
- Perspiration.
- Palpitation and raised blood pressure.
- Dizziness.
- Nausea and vomiting.
- Increased saliva.
- Diarrhoea.

If an allergic reaction occurs after a scorpion sting, the symptoms are:

- Affected consciousness.
- Unconsciousness.
- Cramps.
- Blood pressure drop.
- Chock and with that, a critical state.

Action:

- Place ice cubes on the sting wound to relieve the pain.
- Perform life-saving first aid ABC.

Contact Radio Medical and follow the prescription

Index of first aid procedures

The index below contains a series of procedures for the follow-up on ABC, the work in sickbay and the finishing treatments in consultation with Radio Medical.

Special thanks to Head of clinic Marie Hamming
and Consultant Lars Erik Larsen, Sydvestjysk Hospital
in Esbjerg for professional sparring and proofreading and
also much regard to other proofreaders and models used in
this pamphlet.

Publisher:
Center of the Maritime Health Service,
Vestervejen 1,
6720 Nordby, Fanø.
Tel.: 76 66 04 24
Email: cms@dma.dk
www.soefartsstyrelsen.dk

Layout and DTP: Casa Grafika, Fanø
Printing house: BHM-tryk a/s

First Aid for the Person in charge of Medical Care on board Ships