IAMU 2015 Research Project  
(No. 20150405)  
E-Maritime Medicine for seafarers  
students and seamanship physicians  

By  
Constanta Maritime University (CMU)  

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E-Maritime Medicine for seafarers students and seamanship physicians

Theme 4:

Maritime Medicine Network at Maritime Universities

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Abstract The CMU e-Maritime Medicine initiative aims to foster the use of advanced information technologies for give first aid and training in the maritime transport sector, for seafarers and seamanship physicians. Also this virtual platform will give assistance to all seafarers for the Maritime Universities and their partners and also to medicine doctors (physicians) who are interesting to improve their knowledge on new STCW regulations related to first aid and new technologies such as telemedicine in maritime medicine. On the platform are upload different medical guideline developed to organize all the necessary information on virtual platform for physicians and healthcare institutions planning to practice maritime telemedicine.

Keyword: e-Maritime Medicine, telemedicine, seafarers, ILO, STCW
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1. Introduction

1.1 Preliminary context of the project
The complex information in medicine domain and accelerated emergence of information and new communication technologies in telemedicine is shaping the seafarer professional lives. Constanta Maritime University search new ways to realize the full benefits for health of Maritime Universities students and physicians, for training them and develop new methods for given first aid on seafarers and to take the competitive advantage and sustainability using the proposed E-Maritime Medicine portal.

The Research project – “E-Maritime Medicine for seafarers students and seamanship physicians” is funded by the Nippon Foundation as a part of IAMU’s (International Association Maritime University) capacity building project.

The project was conducted through a cooperation of the two universities: Nikola Vaptsarov Naval Academy (Bulgaria) and Istanbul Technical University - Maritime Faculty (Turkey).

Gráinne Lynch in his presentation “e-Maritime Overview” [2] say’s that “maritime medicine administrative procedures are complex and time-consuming”. The interoperability between maritime medicine information systems is practically non-existent in different sea navigation area like Black Sea, and this limiting the potential for new first aid services. There are also small ports that did not have specific devices for data transmission.

In this days the internet changing the way to how we use different social networks tools and how we find information.

For the new seafarers’ students that are considering being very familiarly with internet tools, they access easily the cyberspace of web and also for them is new mode of their life.

In the future worldwide will need skillful and experienced for future seafarers. This will be possible only if future seafarers have new possibilities to learn lessons offered from the maritime universities.

The e-Maritime Medicine envisages promoting interoperability in its broader sense. It aims to stimulate coherent, transparent, efficient and simplified solutions in support of cooperation, interoperability and consistency between IAMU members and his partners and transport operators.

Regarding the new “Manila Amendments” of STCW, the medical certificate must be in accordance with current requirements until 2017. To prepare our future seafarers and physicians regarding new standards, that must applied though in practice it is useful to develop e-platform for training exchange information in maritime medicine for all IAMU members till 2017.

1.2 Related works and theoretical framework
In the early of 1990, pilot projects regarding telemedicine demonstrated their limitations, either for technical reasons (network performance and medical devices), affirmation made by Gerard Comyn – Vice-President CATEL [3].

In these days, telemedicine is making a big comeback, and seems to offer solutions that are credible which have been tested in real medical situations, to the main challenges facing our society, such as:

- the growing need for patients to become actors in monitoring their own health;
- the necessity of controlling health care costs whilst maintaining high quality care;
- the lack of availability of qualified personnel in certain branches of professional healthcare;
A lot of pilot projects, regarding telemedicine, there are now in all EU member states, but telemedicine is not yet entitled to be cited at national level in any one of them. The aim of the project is to help you take stock of the development of new environment to made telemedicine for seafarers, and the necessity of challenge from maritime environment. It also aims to clarify the problems which are still holding back the development of telemedicine for cadets students and seafarers, and to outline a sketch of what the medicine of tomorrow might look like for the student cadets of Maritime Universities.

Maritime health – scope a presented below:

**At sea / on board:**
- **Fitness** to work – ↓ safety & illness risks
- Safe & healthy **working conditions**
- **Prevention:**
  - seafarers risks while at sea
  - passenger risks
- **Emergencies** (illnesses and injuries):
  - training
  - medication and facilities (IMGS)
  - telemedical advice

**Onshore:**
- Onshore care, **rehabilitation and repatriation**
- **Health education and promotion** – personal, environmental
- **Preventing disease transmission** ashore
- Long term diseases, **retirement and death**

We can put some important questions:
1) who are the stakeholders in maritime medicine?
2) Who regulates the seafarers’ medical exams?

The answer is presented in the following:

- **Public sector**
  - Maritime directorates (governments)
  - UN Agencies/NGO’s: ILO, IMO, WHO
- **Employers**
  - Shipping companies
  - Ship-owners associations: ISF, ICS
  - Crewing companies
  - Manning agents
- **Insurers (P&I Clubs)**

Who wants better maritime health? Everybody, but:

- **Employers**:
  - want fit crews without any long term commitment to care
  - are reluctant to investigate risks because new and costly problems may be found.

- **Governments**:
  - trivial contribution to population health
  - often no health expertise in maritime authorities
  - may fund studies if politically essential.
Seafarers:
- want security and care
- may not be willing participants in prevention
- do not want to lose jobs because of unfitness.

UN Agencies:
- ILO – wants decent working conditions for seafarers
- IMO – wants safe ships
- WHO – not focused on seafarer’s health (exp. ILO/WHO Guidelines & IMGS)

It is well known the Digital agenda for Europe acknowledges that has the main scope to support all effort regarding eHealth services to reach their full potential till 2020, remark Neelie Kroes, VicePresident of the EC and Commissioner in charge of the Digital Agenda for Europe in the article “Telemedicine and Infrastructures in Europe” [3]. Also she says that:
“The European Commission will be active in supporting the deployment of projects that provide Europeans with secure online access to their own health data and enable online health services”.
We thing that the same vision can be apply on maritime sector, and first step can be made by Maritime Universities together with Medicine Faculty from each country.
EU vision is that e-Health services [3], using secure and practical ICT based tools and services european citizens can take greater control of their health: whether it be making an appointment online with their doctor, or getting a second opinion on test results, or learning how to take preventive measures to stay healthy.
This is a feasible step and can make a real difference for the efficiency of health systems, and for patients’ lives.

“The health of seafarers is not only a major concern of seafarers themselves but also a primary concern of the shipowner/operator/manager. With approximately 80% of maritime accidents caused by human error, sickness and injury benefits represent a growing proportion of the shipping industry’s third party liability insurance claims” (see [4] International Labour Organization).

Also from C 164 - Health Protection and Medical Care (Seafarers) Convention, 1987 (No. 164) can found on article 4 that:
“Each Member shall ensure that measures providing for health protection and medical care for seafarers on board ship are adopted which: (b) aim at providing seafarers with health protection and medical care as comparable as possible to that which is generally available to workers ashore.”
And at article 7 from the same convention, are stipulated that:
“The competent authority shall ensure by a prearranged system that medical advice by radio or satellite communication to ships at sea, including specialist advice, is available at any hour of the day or night.
Such medical advice, including the onward transmission of medical messages by radio or satellite communication between a ship and those ashore giving the advice, shall be available free of charge to all ships irrespective of the territory in which they are registered.”

Maritime states with a maritime or joint rescue coordination centre (JRCC) are obliged to provide Telemedica Assistance Services (TMAS). This kind of medical assistance have some difficulties like:
- The seafarer patient has not consulted by the doctor who assist him.
- The doctor usually discusses with the officer of the watch, not directly with the seafarer patient.
There is no standardized system for patient ID (and hence lack medical history, no possibility of tracking etc.)

The ability to have visual pictures of the crew man makes an enormous difference when doctors it comes to deciding whether to treat the illness or injury on board or to recommend a diversion or evacuation.

Affordable, high-quality video conferencing would seem to be the final link in the chain of medical care between ship and shore.

The greatest benefit of telemedicine is its ability to prevent the escalation of medical cases.

Ship operators can get the most out of telemedicine by using their subscriptions for non-emergency consultations, trial calls, and every day medical questions.

By accurately assessing and managing a situation via telemedicine, ship operators can prevent costly and avoidable evacuations.

Video has clear advantages in enhancing communication between doctor, patient, and assisting seafarers.

We consider that only an effort on the part of all actors in medical care will be necessary in order for telemedicine to be accepted by all, and that it will be the role of the IMO decision makers to ensure that such mechanisms are developed in such a way as to take into account its multidisciplinary nature.

2. Objectives and tasks of the project

2.1 Objectives of the project

The main objective was to develop an E-Maritime Medicine portal system for IAMU members and their partners in order to share maritime medicine form point of view regarding educational activities for seafarers students and medicine doctors also. The virtual platform developed by the team, will help IAMU member institutions to improve the knowledge’s of seafarers students and also for medical instructors and exchange know-how by sharing their experience through e-activity platform in maritime medicine.

The second objective was to develop in each maritime university, member of IAMU association, a working groups (engineers, IT specialists and medicine doctors) for improve STCW standards regarding first aid and develop a training programme for physicians' and students interesting in maritime medicine.

Constanta Maritime University (CMU), develop a working group at Black Sea together with the partners for the use of new technology for providing telemedical assistance to seafarers students for CMU in Black Sea area in particular.

The third objective was to create a network between these working groups from IAMU members that have experience in providing maritime telemedical assistance for their students and offers their know how about the use of different telemedical equipment and how to approach the implementation of new telemedical solutions for our physicians and students seafarers in all the Maritime Universities.
2.2 Tasks of the project

Task 1 Develop virtual platform E-Maritime Medicine for World Maritime Universities

To develop an E-Maritime Medicine - a virtual platform with the main aim to improve the knowledges of seafarers students and medical instructors and exchange know-how by sharing their experience through e-activity platform in Maritime Medicine for IAMU members and their partners in order to share maritime medicine form point of view regarding educational activities.

Task 2 Develop a network of working groups in E-Maritime Medicine for universities

Develop in each maritime university, member of IAMU association, a working groups (engineers, IT specialists and medicine doctors) for establishing standards both when it comes to telemedical equipment on board ships and maritime universities centers.
Create a small network between these groups from different maritime universities that have experience in providing maritime telemedical assistance.

Task 3 Develop guideline for seafarers and physicians doctors on E-Maritime Medicine

Developed a guideline to organize all the necessary information for physicians and healthcare institutions planning to practice maritime telemedicine.
In order to maintain the quality of medical care at a level that is higher than needed for seafarers students, the publication of this guideline on virtual platform will promote the understanding of maritime telemedicine. This guideline applies to a healthcare system in which physicians adhere to the belief that they are primarily responsible for providing real-time, bi-directional healthcare to seafarers students patients using telecommunication and audiovisual equipment.
This guideline comprises the following: a chapter with definitions and explanations of major items related to maritime telemedicine for the purpose of achieving a common understanding among physicians and medical institutions in Constanta. Another chapter where we mentions the advantages and disadvantages of the system. Next, matters of vital importance in performing maritime telemedicine also will be explained in next chapters. Most of these notes consist of documentation relating to points which are likely to occur in physicians' daily practice, but which need to be explained in particular when performing maritime telemedicine.

Task 4 Workshop on E-Maritime Medicine

Organize at the end of the project a workshop where we present the virtual platform E-Maritime Medicine, the facilities of the platform, the main menu with content of materials made by the working groups from different universities and also the workshop give the facilitation to the members of the project made the results dissemination and from the specialists in maritime medicine can sharing their results regarding data from treatment of seafarers. Also this workshop consist a small session on maritime health and safety with an interdisciplinary participation.
3. Findings and Outcomes of the research

3.1 Presentation of the Virtual platform E-Maritime Medicine

The e-Maritime Medicine envisages promoting interoperability in its broader sense. It aims to stimulate coherent, transparent, efficient and simplified solutions in support of cooperation, interoperability and consistency between IAMU members and its partners and transport operators.

The e-Maritime Medicine platform was developed and his address is www.emaritimemedicine.net.

![Fig.1 The web page for the virtual platform E Maritime Medicine](image)

The team of the project develop a lot of programming codes to made each part of the virtual platform. For the benefit on long term we choose to use in developing free open source WordPress interface for programming.

The main menu in the front of the page (see Fig. 2), has different sub-menus with important sector’s for improve the knowledge of the cadets students and medicine doctors who want to learn more or to training or be informed regarding the maritime medicine concept.

![Fig. 2 Menu of the e-maritime medicine platform](image)

The Home menu are presented in Fig. 3, and was develop on 6 column with 6 main section like : Project Workshop, eMM Workshop Announcement, Internet Era & emaritime Medicine, regional Testing, Project Scheduled Tasks and eMM Objectives.
The team made the programming of the portal as well to be available in similar way for smart phone, and tablet, as like for desktop computer. For exemplification in Fig. 4 are presented the view of the web portal on smart phone and desktop.

At section Events in Fig. 5 are presented the trailer guideline for the web page, and the few presentation for the final workshop of the project, and in Fig.6 the new listing for future conferences or symposiums on maritime medicine.
In Fig. 7 on submenu Education & Training, the users can find medical guidelines for self-training or the most important links to different scientific journal, like Scientific Journal in Maritime Medicine International Maritime Health or Journal of the Royal Naval Medical Service, for self-study and documentation in maritime medicine.
In Fig. 8 on submenu *Maritime Medicine*, are presented for students the links to the most guidelines made by different flags.

In Fig. 9 on submenu *Travel Medicine*, cadet students for maritime Universities, can find information useful to them and also for students of the faculties of medicine, regarding travel medicine with their subtopics like: prevention (vaccination and travel advice), assistance (dealing with medical treatment of travelers), wilderness medicine (e.g. medicine, cruise ship medicine, expedition medicine, etc.) and access to health care, provided by travel insurance.

In Fig. 10 on submenu *Offshore Medicine*, students and medicine doctors can find useful information regarding the NOGEPA 2.2A Basic Offshore First Aid course accreditation [5]. Also is offer link with information regarding offshore workers needs to pass an Offshore Medical Examination if they wish to work in offshore domain.
In Fig. 10 on submenu *Occupational Health*, student users from partner’s universities can find information in their own native language or English language about occupational health using the links on the page.

In Fig. 11 on submenu *Occupational Health*, students and seafarers can watch a lot of video files with demonstration on clinical examination techniques. Also there is a link to the textbook with access to the full set of videos that is available at www.elsevierhealth.co.uk/macleod.

In Fig. 12 on submenu *Interactive Medical Advice*, users can find useful information regarding self-evaluation of their symptoms of illness for receive some advices for treatment, using *Evaluate your Symptoms* submenu, that lead to the link of *Free Online services* [6], provided by www.freemdl.com. Also using *Equipments & Medevac* submenu, users can become familiarly with the specific medical devices and equipment’s use in helicopter rescue or cruise ship.

In Fig. 13 on submenu *Interactive Medical Advice*, the team prepare a specific part of eMM Interactive Area, where every medicine doctors from the world can organize meeting with and cadets students for training or can provide telemedicine services for theirs cadets students or seafarers.
The virtual platform offers different kinds of medical clinical specialty enrolment for the users of e-maritimemedicine, like:
- eMM Gastroenterology
- eMM General Medicine
- eMM Infectious Diseases
- eMM Medical Treatment
- eMM Musculoskeletal
- eMM OnBoard Emergency Medicine
- eMM OnBoard Medical Assistance
- eMM OnBoard Medical Training
- eMM OnBoard Remote Assistance

For this facility, the team integrate in the virtual platform of e-maritimemedicine an open source web conferencing given by BigBlueButton interface [7] (see Fig. 14).

The users can use all the facilities by enrolling on platform with username and password (see Fig. 15).
In Fig. 16 on submenu *Health Certificates*, we give medicine doctors information regarding the steps needed for a seafarer’s doctor to be authorized as a medical practitioner approved by Norwegian authorities to perform medical examinations and make decisions in accordance with the provisions of the Regulations concerning the medical examination of employees on Norwegian ships and mobile offshore units.

In Fig. 17 users can find various links to different institutions and authorities on maritime field from Romanian, Bulgarian or Turkish countries and also for world maritime institutions.

Also on the web page there is an *RSS information flux*, with latest news from IMO (see Fig. 18).
On e-maritimemedicine platform, using the integrated open source web conferencing given by BigBlueButton interface, we can share all medical activities and also the interaction between seafarers patient, with simultaneous medicine doctors that can assure medical assistance simultaneously through this synchronous communication.

Participants (seafarer’s patients and different medicine doctors) can communicate and interact with each other and with the environment, where in the BigBlueButton interface, there is possibility to chatting or made video conferencing, and in the presentation framework medicine doctor can put different results evaluation or radiographic (see Fig. 19) or echography image for analyzing and discuss with others doctors for second opinion.

![Fig. 19 Frame work testing for medical image discussion](image)

The team made research and test this kind of developed interface using web resources and prove that this interface can be a useful tool for using in the future like telemedical assistance for seafarers on ship.

### 3.2 The network of working groups in E-Maritime Medicine in the Black Sea basin

The team from CMU establish the working groups in E-Maritime Medicine for the first time in the Black Sea basin.

Such working groups of doctors and engineers from the two partner universities (Nikola Y. Vaptsarov Naval Academy (NYVNA), Bulgaria and Istanbul Technical University (ITU)), conducted meetings and collaborated in order to develop the network with new members.

Also the networking group collaborated in order to create specific materials to be upload on the virtual platform for training cadets students.

### 3.3 Develop guideline for seafarers and physicians doctors on E-Maritime Medicine

The team doctors from Constanta Maritime University develop a specific Guideline for seafarers and physicians doctors on E-Maritime Medicine with title:

- Guidelines for Malaria Prevention (in English)

The team doctors from Maritime Faculty, Istanbul Technical University, develop a specific Guideline for seafarers and physicians doctors on E-Maritime Medicine with title:

- Gemiler İçin Tibbi Rehber (Medical Guide for Ships) (in Turkish)

And the team from Naval Academy N.Y.Vaptsarov from Varna, Bulgaria, develop a consideration regarding infectious disease Malaria.
3.4 The Workshop E-Maritime Medicine in the Black Sea basin
The team from Constanta Maritime University, together with Naval Academy N.Y.Vaptsarov from Varna, Bulgaria, and Maritime Faculty, Istanbul Technical University, Turkey organize on 28 May 2016 the workshop, when the virtual platform become operational in function. Also the medicine doctors from the Black Sea basin network present their research regarding maritime medicine in the plenary session in the workshop.

4. Research Deliverables (including presentations and research papers)

4.1 Deliverables research presented on AGA 16 meeting and at Sea Medicine conference
The domain address for E-maritime medicine platform reservation was made, and the address is www.emaritimemedicine.net. Also the first version of the platform architecture and this achievement was popularized at “Sea Medicine” Conference and also at AGA16, [8], that was hosted by University of Rijeka, Faculty of Maritime Studies, Croatia, in period 7 to 9 October 2015, through the paper with title:

E-Maritime Medicine for Seafarers Students and Seamanship Physicians

4.2 Deliverables research presented at the workshop

ABSTRACTS of WORKSHOP PRESENTATIONS

E-MARITIME MEDICINE VIRTUAL PLATFORM FOR HEALTH AND MEDICAL TRAINING OF CADETS AND SEAFARERS

Authors: Raicu G., Zagan R., Constanta Maritime University

The e-Maritime Medicine envisages promoting interoperability in its broader sense. It aims to stimulate coherent, transparent, efficient and simplified solutions in support of cooperation, interoperability and consistency between IAMU members and his partners and transport operators. To prepare our future seafarers and physicians regarding new standards, that must applied though in practice it is useful to develop e-platform for training exchange information in maritime medicine for all IAMU members till 2017.

E- Maritime Medicine – there is a virtual platform with the main aim to improve the knowledges of seafarers students and medical instructors and exchange know-how by sharing their experience through e-activity platform in Maritime Medicine for IAMU members and their partners in order to share maritime medicine form point of view regarding educational activities.

Keywords: Medicine virtual platform, IAMU, IMO
MARINE PROFESSION- REQUIREMENTS FOR HEALTH AND MEDICAL TRAINING OF SEAFARERS

Author : Plamena Stoykova, Nikola Vaptsarov Naval Academy, Varna, Bulgaria

The life and work at sea can be a challenge for physical and mental health of the sailor. Many studies and surveys have placed the maritime profession at one of the top places in the charts of stress and responsibility among professions.

Working conditions and life on board the ship are very different from those on land and require sailor not only serious professional training, skills and qualifications but also physical and mental qualities and health.

Living and working away from the coast, home and loved ones in a closed environment and team sailor was placed in substandard conditions. Requirements for it are much larger. Work pressure and responsibilities related to professional duties and competence affect performance and health of the sailor.

Keywords: STCW, IMO

PANORAMIC VIEW TO STCW MEDICAL FIRST AID AND MEDICAL CARE COURSES FOR MARITIME STUDENTS

Author : Dr. Levent Beven, Istanbul Technical University, Maritime Faculty

According to the International Shipping Federation (ISF) records; there are about one and a half million seafarers currently working onboard ships. Working in harsh environment, there are so many medical emergencies, life threatening diseases and fatal health problems. Ship’s onboard infirmary contains different types of medicine and medical equipment recommended by the World Health Organization (WHO). According to the STCW Convention, Seafarers are required to have Elementary First Aid, Medical First Aid and Medical Care certifications for knowledge and practical skills to overcome medical problems. When a problem occurs, master must have sufficient knowledge and efficient manual skills to prevent medical emergencies. Usually, advice through tele-medicine helps to solve specific problems; however, time is significant for reducing the higher level risks of casualties injuries.

Potential risks of death, insufficient medical knowledge and inadequate practical skills retain the master to act properly and apply the sufficient treatment and therapy.

In order to improve the knowledge and practical skills, seafarers must practice more medical equipment such as adequate manikins same as medical students. Standard modules, animation programs and digital exams can improve medical knowledge and manual skills for seafarers. At the end we must have a checklist to examine the procedure in order to observe whether the results are sufficient or not. Also, we must refresh practical skills in certain times.

Keywords: STCW, IMO Model Courses, certificates, maritime medicine, maritime training.
Because of the work conditions and for the prevention of the occupational injuries, the ship-owners have required for more and more complex medical exams of the seafarers. The standards of the medical exams have become tougher. It has imposed the need for clinics and doctors internationally recognized based on the quality of the medical act performed by these. It has been decided on some medical forms and guidelines widely recognized (such those of the ILO or NMA).

The maritime doctors and clinics are well monitored by authorities through audits and reports. The decrease of the quality standards for medical exams (through the feedback offered by seafarers) and the increasing number of disembarkation lead to the loss of the approval of the involved doctor or clinic. The cost of the disembarkation for a shipping company is huge, which is why the ship-owner may sue the clinic or doctor if the disembarkation was caused by a pre-existing medical condition ignored by them.

Because there are many stakeholders and their interests are different and because there are many international regulations and guidelines, the main objectives of who looks for quality in maritime medicine are:
- the establish of a common system of auditing and accreditation of the maritime doctors and seafarers
- the uniformity of the medical guidelines for the seafarer’s exams (the need of some unitary international standards of examination)

The aim of the medical examination is to ensure that the examined seafarer is fit to perform routine duties of his position at sea and is not suffering from any disease that might be aggravated by service at sea, make him unfit for service or endanger the health of other persons on board.

The conclusions of the medical examination are used to decide whether to issue a medical certificate to a seafarer. The decisions must be taken based on the application of the fitness criteria which should be uniformly applied, both nationally and internationally because of the global nature of shipping and maritime transport.

The medical certificate is not a simple one which shows the existence or absence of some diseases; it is a confirmation that the seafarer is expected to be able to meet the minimum fitness and medical requirements for carrying out the tasks of the routine and emergency job at sea, safely and effectively throughout the period of validity of the medical certificate.

The ability to perform optimally these requirements depends on the current health of the person and the likelihood that he or she will not develop a medical condition during the period of validity of medical.

The presentation is trying to clarify whether the existing global guidelines are enough or we need new or more medical tests. Many insurers, ship-owners and crewing agencies require a number of additional tests; some of them are invasive and could in some cases jeopardize the employment. So, what is difference between the standards of the competent authorities at government level and standards of the insurers, ship-owners and crewing companies?

To prevent illness at sea, deaths and repatriations, the shipping companies and P&I Clubs have started up a program named PEME through which:
- The medical tests are more complex
- The medical doctors and clinics are strict selected and monitored
- The medical guidelines are more comprehensive and specific

Keywords: stakeholders, medical guidelines, seafarers
EVALUATION OF OCCUPATIONAL RISK FACTORS FOR CARDIOVASCULAR DISEASE IN ROMANIAN SEAFARERS

Author: Dr. Loredana Hanzu-Pazara, Ovidius University of Constanta, Faculty of Medicine

Cardiovascular diseases represent one important cause of morbidity and mortality worldwide. Seafarer job implies a lot of occupational risk factors like stressful situations on board vessel, modified diet or lack of exercise and sedentarism, along with psychosocial factors that may influence directly by damaging the endothelium or indirectly by aggravating the traditional risk factors like smoking, dislipidemia or diabetes. The study was analyzing data from 200 Romanian seafarers evaluated at periodical pre-employment examination and periodical medical fitness tests in IOWEMED MEDICAL CENTER, Constanta, Romania. There collected demographic data, biological results and cardiovascular investigations, that were comparatively analyzed in between different compartments, with respect of stress level given by occupational status.

Results: In the total sample (n = 200), 60 seafarers (30%) were presenting cardiovascular changes including mostly arterial hypertension. Cardiovascular diseases were higher in deck operational crew (32.85%), compared with engine (21.05%) and other compartments (27.27%). Most prevalent independent risk factors in seafarers were high low-density lipoproteins and dislipidemia in general (68.5%), differentiated on working compartments (deck 70.71% vs. engine 65.78% vs. else 59.09%). Overweight played an important addictive role. Diabetes mellitus did not present a different scale compared to general population, even if in between compartments there were differences (deck 11.42% vs. engine 5.26% vs. else 9.09%). Blood pressure was higher in operational deck compartment compared with others, but the difference was not statistically significant. An interesting observation was given by the measurement of ejection fraction in cardio – Doppler ultrasound exam that revealed a decreased value in operational compartments (deck, engine) compared with rating. Smoking was an independent risk factor that did not differ among compartments.

Conclusions: Even if the medical standards are tending to become more precise in evaluating the health status and the cardiovascular risk, with the reduction of the possibility of allowing unfit crew to go to sea, the cardiovascular diseases seem to remain important factors of distress on board vessels and is necessary to overview all the elements that augment it.

Keywords: Seafarers, risk factors, cardiovascular disease

SEAFARERS AND THE RISK OF INFECTIOUS DISEASES

Authors: Irina Magdalena Dumitru, Lucia Zamfirescu, Ovidius University of Constanta, Clinical Infectious Diseases Hospital

Seafarers, sea passengers and cargoes, were the major route by which infections were carried around the world. The importance of sea transport as a route of transmission of infection has now diminished, but seafarers themselves remain at risk from a wide range of infectious diseases and have a pattern of work, with worldwide sourcing of crews, periods at sea remote from medical care, port visits and leave periods in home countries that leads to a unique set of challenges for the prevention, diagnosis and treatment of infectious diseases.

Seafarers are a unique occupational group in that their travels to different parts of the world expose them to different types of infections. Recent studies conducted, mostly in Europe, have shown...
concerns on Malaria, Hepatitis A, Hepatitis B, Hepatitis C, Human Immunodeficiency Virus and Gastro-Intestinal (GI) infections. Although much concern has been shown to the resurgence of Tuberculosis (TB) infection in many countries, whether seafarers are at risk of contracting TB at ports of call is uncertain. Therefore, it is very important to know the current situation on these identified group of infectious diseases and recommends preventative measures. The lack of even basic data is a major impediment to conducting quality seafarer health research and prove the need for the collection and maintenance of complete data sets on seafarer health indices.

Keywords: Seafarers, Malaria, Hepatitis

TELEREBHABILITATION CONCEPT IN LOW BACK PAIN IN SEAFARERS
– FROM THEORY TO PRACTICE

Authors: Iliescu Mădălina-Gabriela, Ionescu Elena-Valentina, Iliescu Dan-Marcel, Ovidius University of Constanta, Faculty of Medicine

Chronic low back pain is one of the frequent pathologic conditions of seafarers, which, during specific activity, has limited access to traditional recovery services. Telemedicine and telerehabilitation concept tends to develop in these situations, coming as a practical solution, effective in relieving symptoms for this group of patients. The face to face therapeutic program is comparable with telerehabilitation program, both having important role in primary clinical evaluation, based on an online questionnaire, or monitoring the accuses, posture lumbar spine, lumbar dynamics (easily self-applied tests) to perform activities of daily living, without interrupting every day work schedule. Proper management of this pathological condition is sometimes critical, especially in exacerbations; our goal is to implement an online telerehabilitation program based on specific therapeutic exercises. Telerehabilitation through real-time physical therapy in chronic low back pain tends to be feasible and effective, compared with conventional face to face therapies, if using a simple tool for primary and secondary clinical evaluation, based on specific questionnaires. This system may have significant implications in clinical practice for developing a physiokinetotherapy system for distance for seafarers. This demonstrates that the standard approach of chronic low back pain can be validated through telerehabilitation, for the purpose of implementation of a remotely accessible therapeutic program.

Keywords: Telemedicine , telerehabilitation

TELEMEDICINE BETWEEN NECESSITY AND CHALLENGE FOR THE IAMU MEMBERS
SOLUTION FOR IMPROVE THE HEALTH OF CADETS AND SEAFARERS

Authors: Zagan R., Raicu G., Constanta Maritime University

The potential of information and communication technologies (ICT) have a positive impact on the lives of seafarers patients. The European Community having invested over one billion euros in
eHealth research over the past twenty five years, and there is many evidences of how we can bringing together ICT and health can save and improve people's lives.
Our research has shown that a common element of many successful for e-health solutions is their capacity to bring into play what are arguably the two most undervalued resources of the maritime healthcare sector: information and seafarers patients.
Involving seafarers in telemedicine is a challenging and complex exercise, but failure to do so may result in significant mismatches between real seafarers patients’ needs and the ability of the healthcare system to recognise such needs and respond in an efficient way.
Telemedicine and the application of ICTs in health face great challenges that will gradually shape the future of healthcare for seafarers: the ability of shipowner to take responsibility for their own health crews.

Keywords: Seafarers, Telemedicine
## Progress Report for Research Project FY2015
(Deadline 31 March 2016)

<table>
<thead>
<tr>
<th>Theme 4 Maritime Medicine Network at Maritime Universities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research title</strong></td>
</tr>
<tr>
<td>E-Maritime Medicine for seafarers students and seamanship physicians</td>
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<tr>
<td><strong>Research objectives</strong></td>
</tr>
<tr>
<td>The CMU e-Maritime Medicine initiative aims to foster the use of advanced information technologies for give first aid and training in the maritime transport sector, for seafarers and seamanship physicians. The complex information in medicine domain and accelerated emergence of information and new communication technologies in telemedicine is shaping the seafarer professional lives. Constanta Maritime University search new ways to realize the full benefits for health of Maritime Universities students and physicians, for training them and develop new methods for given first aid on seafarers and to take the competitive advantage and sustainability using the proposed E-Maritime Medicine portal. Maritime medicine administrative procedures are complex and time-consuming. The interoperability between maritime medicine information systems is practically non-existent in different sea navigation area like Black Sea, and this limiting the potential for new first aid services. There are also small ports that might not be equipped with electronic data transmission. It is know that the internet changing the way to how we communicate with our social networks, how we search for information. For the new seafarers’ students that are considering being the &quot;internet&quot; generation, access to cyberspace is new mode of their life. In the future Europe will need skilful and experienced European seafarers. This will be possible only if future mariners are offered the same possibilities to keep in touch and to learn as other professions on land. The e-Maritime Medicine envisages promoting interoperability in its broader sense. It aims to stimulate coherent, transparent, efficient and simplified solutions in support of cooperation, interoperability and consistency between IAMU members and his partners and transport operators. Regarding the new “Manila Amendments” of STCW, the medical certificate must be in accordance with current requirements until 2017. To prepare our future seafarers and physicians regarding new standards, that must applied though in practice it is useful to develop e-platform for training exchange information in maritime medicine for all IAMU members till 2015. The main objective is to develop an E- Maritime Medicine portal system for IAMU members and their partners in order to share maritime medicine form point of view regarding educational activities for seafarers students and medicine doctors also. The virtual platform proposed will help IAMU member institutions to improve the knowledge’s of seafarers students and medical instructors and exchange know-how by sharing their experience through e-activity platform in maritime medicine. Also this virtual platform will give assistance to all seafarers for the Maritime Universities and their partners and also to medicine doctors (physicians) who are interesting to improve their knowledge on new STCW regulations related to first aid and new technologies such as telemedicine in maritime medicine.</td>
</tr>
</tbody>
</table>
Will develop a guideline to organize all the necessary information on virtual platform for physicians and healthcare institutions planning to practice maritime telemedicine.

The second objective is to develop in each maritime university, member of IAMU association, a working groups (engineers, IT specialists and medicine doctors) for improve STCW standards regarding first aid and develop a training programm for physicians' and students interesting in maritime medicine.

Maritime Medicine Center from Constanta Maritime University (CMU), want to establish a consensus for the use of new technology for providing telemedical assistance to seafarers students for CMU in Black Sea area in particular.

The third objective is to create a network between these working groups from IAMU members that have experience in providing maritime telemedical assistance for their students and offers their know how about the use of different telemedical equipment and how to approach the implementation of new telemedical solutions for our physicians and students seafarers in all the Maritime Universities.

Maritime Medicine Center from Constanta Maritime University (CMU), want to establish a consensus for the use of new technology for providing telemedical assistance to seafarers students for CMU in Black Sea area in particular and focus also in Orient.

Progress of the research as of 31 March 2016

1. Accomplished Tasks and Activities of the research (including meetings and travels)

**Task 1 Develop virtual platform E-Maritime Medicine for World Maritime Universities**

*Period from Gantt Diagram : May 2015 – January 2016*

The team from Constanta Maritime University (CMU) was involved in discussion with the medicine doctors regarding the architecture of the proposal e-platform that will be developed in this project.

To achieve this objective, regarding the E-Maritime Medicine portal system for IAMU members and their partners, the team establishes a draft version of the architecture of the platform, in order to share maritime medicine form point of view regarding educational activities for seafarers students and medicine doctors also.

Constanta Maritime University (CMU) together with the Ovidius University of Constanta (UOC), Faculty of Medicine, organizes the second edition of the conference “Sea Medicine”, in Constanta, in the period 24-26 September 2015.


Also, the colleagues prof.Ph.D. eng. Panait Cornel and Assoc.Prof.Ph.D. eng. Raicu Gabriel, was attended in AGA16 that was hosted by University of Rijeka, Faculty of Maritime Studies, Croatia, in period 7 to 9 October 2015, in which they made a presentation of an interim report for the research project.
For the project was made the reservation of the domain for E-maritime medicine platform, and the name reservation is “emaritimemedicine.net”.

**Task 2 – Develop a network of working groups in E-Maritime Medicine for universities**  
Period from Gantt Diagram : October 2015 – May 2016

Regarding this task, the team from CMU establish contacts and meetings with the team partners for this project, e.g. the team from Nikola Vaptsarov Naval Academy (NVNA), Bulgaria and also the team from Istanbul Technical University (ITU), Faculty of Maritime, Turkey.

Because we assume develop a network of working group in E-maritime medicine, the team from CMU establish contacts and meetings with medicine doctor Plamena Stoykova, from Nikola Vaptsarov Naval Academy (NVNA), Bulgaria and made a working group at this university for e-maritime medicine.

Also the team from CMU establish contacts and meetings with medicine doctor Beven Levent from Istanbul Technical University (ITU), Faculty of Maritime, Turkey and made a working group at this university for e-maritime medicine.

At this stage the team from CMU work together with the partners to enlarge the working groups in other countries.

**Task 3 Develop guideline for seafarers and physicians doctors on E-Maritime Medicine**  
Period from Gantt Diagram : October 2015 – May 2016

The medicine doctors from the team of CMU finalize one guidance regarding infectious diseases and have in work another two materials.

The medicine doctors from the team of Istanbul Technical University (ITU) finalize one guidance in Turkish language for Turkish students, regarding general guidance (Medical Guide for Ships).

The medicine doctors from the team of Nikola Vaptsarov Naval Academy (NVNA), Bulgaria have in work another two materials.

**Task 4 – Workshop on E-Maritime Medicine**  
Period from Gantt Diagram : March 2016 – May 2016

Regarding this task, the team of CMU made discussions with partners to establish the workshop program, the schedule and other preparations that need.

2. Findings and Outcomes of the research

**Task 1 Develop virtual platform E-Maritime Medicine for World Maritime Universities**  

This task was fully realized. Such domain for E-maritime medicine platform reservation was made. Also we crystallized the platform architecture and this achievement was popularized at “Sea Medicine” Conference.
and also at AGA16 that was hosted by University of Rijeka, Faculty of Maritime Studies, Croatia, in period 7 to 9 October 2015.

**Task 2 Develop a network of working groups in E-Maritime Medicine for universities**
Period from Gantt Diagram: October 2015 – May 2016

The team from CMU establish the working groups in E-Maritime Medicine for the first time in the Black Sea basin.

Such working groups of doctors and engineers from the two partner universities (Nikola Vaptsarov Naval Academy (NVNA), Bulgaria and Istanbul Technical University (ITU)), conducted meetings and collaborated in order to develop the network.

This task is in progress.

**Task 3 Develop guideline for seafarers and physicians doctors on E-Maritime Medicine**
Period from Gantt Diagram: October 2015 – May 2016

Such working groups of doctors and engineers from the two partner universities (Nikola Vaptsarov Naval Academy (NVNA), Bulgaria and Istanbul Technical University (ITU)), conducted meetings and collaborated in order to create specific materials to be covered by the virtual platform.

This task is in progress.

**Task 4 – Workshop on E-Maritime Medicine**
Period from Gantt Diagram: March 2016 – May 2016

Regarding this task, the team of CMU made discussions with partners to establish the workshop program, the schedule and other preparations that need.

This task is in progress.

3. Research Deliverables (including presentations and research papers)

1) The paper with title:
   E-maritime medicine concept for maritime universities (in English)


2) The paper with title:
   Acclimatization - analysis tools and its prophylactic measures in maritime medicine
   (in Romanian)

3) The paper with title:
   E-Maritime Medicine for Seafarers Students and Seamanship Physicians

presented at AGA16 that was hosted by University of Rijeka, by the colleagues prof.Ph.D. eng. Panait Cornel and Assoc.Prof.Ph.D. eng. Raicu Gabriel.

4) Guideline for seafarers and physicians doctors on E-Maritime Medicine with title:
   Guidelines for Malaria Prevention (in English)
made by Romanian medicine doctors’ Prof.Ph.D. Rugina Sorin and Assoc.Prof.Ph.D.. Dumitru Irina.

5) Guideline for seafarers and physicians doctors on E-Maritime Medicine with title:
   Gemiler İçin Tıbbi Rehber (Medical Guide for Ships) (in Turkish)
Made by Turksih medicine doctor Levent Beven

4. Self-assessment on the progress (compared with the time schedule in the application form)

**Task 1 Develop virtual platform E-Maritime Medicine for World Maritime Universities**

This task is ready and compared with the time schedule in the application form, we consider that the period was respected.

**Task 2 Develop a network of working groups in E-Maritime Medicine for universities**
Period from Gantt Diagram : October 2015 – May 2016

This task is ready 75% when we compared with the time schedule in the application form.

We consider that the period will be respected, because at the end of the April, new working groups will join to the created network, which will become operational in April.

**Task 3 Develop guideline for seafarers and physicians doctors on E-Maritime Medicine**
Period from Gantt Diagram : October 2015 – May 2016

This task is ready 75% when we compared with the time schedule in the application form.

We consider that the period will be respected, because at the end of the April all guidelines will be ready to upload on the platform.

**Task 4 – Workshop on E-Maritime Medicine**
Period from Gantt Diagram : March 2016 – May 2016
This task is at the beginning stage.

We consider that the period will be respected, because in the last week of May the workshop will be organize.

5. Further activities planned to complete the research project

**Task 2 Develop a network of working groups in E-Maritime Medicine for universities**

Period from Gantt Diagram : October 2015 – May 2016

We are planning to attract new working groups from different maritime universities to join at the created network.

**Task 3 Develop guideline for seafarers and physicians doctors on E-Maritime Medicine**

Period from Gantt Diagram : October 2015 – May 2016

We plan to complete medical guidelines that we want to be on the virtual platform and in addition will complete specific materials to help the cadets in the sea of information on safety and first aid

**Task 4 – Workshop on E-Maritime Medicine**

Period from Gantt Diagram : March 2016 – May 2016

We planning to finalize the program for the workshop.

At this workshop will be the first complete presentation of the activities developed by this project and also the E-Maritime Medicine platform with all facilities.

Also will be presented the working groups in the field and the specific medical contacts, for each university member at IAMU.

6. Others (if any)

The premiere of the workshop will be the presentation of application for interactive technologies in sea medicine and how we can make the virtual transfer of expertise from medicine doctor to the seafarer patient.
References

Attachment
Attachments

1) Presentation the paper
“E-Maritime Medicine for Seafarers Students and Seamanship Physicians “
presented at AGA16 that was hosted by University of Rijeka, Faculty of Maritime Studies, Croatia, in
period 7 to 9 October 2015

FY 2015 RESEARCH THEME 4
Maritime Medicine Network
at Maritime Universities

E-Maritime Medicine
for seafarers students
and
seamanship physicians

Authors
Zagan Remus  Raicu Gabriel

INTRODUCTION
The CMU E-Maritime Medicine initiative aims to foster the use of advanced information technologies for give first aid and training in the maritime transport sector, for seafarers and seamanship physicians.

Constanta Maritime University search new ways to realize the full benefits for health of Maritime Universities students and physicians, for training them and develop new methods for given first aid on seafarers and to take the competitive advantage and sustainability using the proposed E-Maritime Medicine portal.

Task 1
Develop virtual platform E-Maritime Medicine for World Maritime Universities

To develop an E-Maritime Medicine - a virtual platform with the main aim to improve the knowledges of seafarers students and medical instructors and exchange know-how by sharing their experience through e-activity platform in Maritime Medicine for IAMU members and their partners in order to share maritime medicine form point of view regarding educational activities.

Coordinator: Constanta Maritime University

Task 2
Develop a network of working groups in E-Maritime Medicine for universities

Develop in each maritime university, member of IAMU association, a working groups (engineers, IT specialists and medicine doctors) for establishing standards both when it comes to telemedical equipment on board ships and maritime universities centers.

Create a small network between these groups from different maritime universities that have experience in providing maritime telemedical assistance.

Coordinator: Nikola Y. Vaptzarov Naval Academy

Task 3
Develop guideline for seafarers and physicians doctors on E-Maritime Medicine

Developed a guideline to organize all the necessary information for physicians and healthcare institutions planning to practice maritime telemedicine.

This guideline applies to a healthcare system in which physicians adhere to the belief that they are primarily responsible for providing real-time, bi-directional healthcare to seafarers students patients using telecommunication and audiovisual equipment.
Task 4
Workshop on E-Maritime Medicine

Organize at the end of the project a workshop where we present the virtual platform E-Maritime Medicine, the facilities of the platform, the main menu with content of materials made by the working groups from different universities and also the workshop give the facilitation to the members of the project made the results dissemination and from the specialists in maritime medicine can sharing their results regarding data from treatment of seafarers. Also this workshop consist a small session on maritime health and safety with an interdisciplinary participation.

PROJECT TEAM PRESENTATION

Research Team from Project Coordinator
CONSTANTA MARITIME UNIVERSITY

Research Team from Partner 1
NIKOLA VAPTSAROV ACADEMY

Research Team from Partner 2
ISTANBUL TECHNICAL UNIVERSITY
MARITIME FACULTY

Task 1
Develop virtual platform E-Maritime Medicine For World Maritime Universities

Portal presentation
E-Maritime Medicine for seafarers students and seamanship physicians

E-Maritime Medicine Portal

HOME

E-Maritime Medicine, a virtual platform with the main aim to improve the knowledge of seafarers, students, maritime institutions and agencies know how to share their experience through a virtual platform in maritime education for AMU members and non-participants in order to share knowledge and exchange information in support of cooperation, interoperability, and coordination between marine, marine protection and non-marine operators.

E-Maritime Medicine was designed to offer a global, flexible, and user-friendly platform to facilitate knowledge sharing and exchange. The system was developed to provide a secure and reliable environment for maritime professionals to access and share knowledge and information. The portal includes a variety of features, including search and filtering capabilities, user profiles, and personalization options.

To ensure the security and confidentiality of the data exchanged, the platform uses advanced encryption techniques and secure communication protocols. This ensures that the information shared remains confidential and secure. The portal also includes a user-friendly interface, allowing users to easily navigate and access the information they need.

The platform is accessible through a web-based interface, which can be accessed from any device with an internet connection. This allows users to access the platform from anywhere, at any time, and from any device.

In addition to the main portal, the platform includes a mobile app, allowing users to access the information on the go. The app includes a variety of features, including a personalized dashboard, push notifications, and integration with other applications.

The platform is designed to be scalable and adaptable, allowing it to be customized to meet the needs of different users and organizations. The platform can be integrated with other systems and platforms, allowing for seamless data exchange and integration.

The platform is designed to be user-friendly and intuitive, allowing users to quickly and easily access the information they need. The platform includes a variety of features, including search and filtering capabilities, user profiles, and personalization options.

The platform is designed to be highly secure, with advanced encryption techniques and secure communication protocols. This ensures that the information shared remains confidential and secure.

The platform is designed to be highly scalable and adaptable, allowing it to be customized to meet the needs of different users and organizations. The platform can be integrated with other systems and platforms, allowing for seamless data exchange and integration.

The platform is designed to be highly reliable, with robust error handling and fault recovery mechanisms. This ensures that the platform is available and functional at all times.

The platform is designed to be highly performant, with efficient algorithms and data structures. This ensures that the platform can handle a large number of users and transactions simultaneously.

The platform is designed to be highly extensible, with a variety of APIs and integration options. This allows the platform to be easily integrated with other systems and platforms, allowing for seamless data exchange and integration.

The platform is designed to be highly customizable, allowing users to modify and extend the platform to meet their specific needs.

Summary

The E-Maritime Medicine platform is a virtual platform designed to improve the knowledge of seafarers, students, maritime institutions, and agencies. The platform allows users to share their experience through a virtual platform in maritime education for AMU members and non-participants. The platform is designed to be user-friendly, secure, scalable, adaptable, reliable, performant, extensible, and customizable. The platform includes a variety of features, including search and filtering capabilities, user profiles, and personalization options. The platform is designed to facilitate knowledge sharing and exchange, allowing users to access and share information in support of cooperation, interoperability, and coordination between marine, marine protection, and non-marine operators.
E-Maritime Medicine

INTRODUCTION

IN MARITIME MEDICINE

The definition of "maritime medicine" covers a large number of issues, as the environment of seafaring affects the microclimate and macroclimate, noise and vibration aboard ship, ambience, other work-related exposures; conditions of work (the so-called "coat, cap, open, and closed"), passenger and faculty exposure; and on the ship's dietary and food hygiene aboard ship; pathology of workers employed on ships (diseases, accidents and injuries); financing of seafaring, social security, health problems of crews, and the rights of seafarers. Regulations of ship's medical services on land and at sea; health standards for at sea and medical examinations of seafarers and radiological advice for ships.

E-Maritime Medicine

CLINIC SPECIALTIES

Carnitisology
Psychotherapy
Physiotherapy Advice
Gastroenterology
Psychiatry and Psychotherapy
Gynecology
O.R.L.
Internal Medicine
Urology
Cardiology
Urology
Mano/orioria

E-Maritime Medicine

FAQs

E-Maritime Medicine

IMMUNIZATION DURING A JOURNEY

We strongly advise all seafarers to have the necessary vaccinations before leaving port. Vaccinations are integrated in the pre-departure health check and must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consult with your doctor or local health authorities before embarkation to ensure that you are fully vaccinated. In case of unexpected travel, a pre-departure health check must be completed before the vessel departs. It is important to consul
2) Presentation the papers on the workshop E – Maritime Medicine on 28 May 2016

E-maritime medicine virtual platform for health and medical training of cadets and seafarers
Authors: Raicu G., Zagan R., Constanta Maritime University

Preamble
The CMU E-Maritime Medicine initiative aims to foster the use of advanced information technologies for providing first aid and training in the maritime transport sector, for seafarers and seafarers' physicians.
Marine profession - requirements for health and medical training of seafarers
Author: Plamena Stoykova, Naval Academy N.Y. Vaptsarov, Varna, Bulgaria
<table>
<thead>
<tr>
<th>Marine profession requirements for health and medical training of seafarers</th>
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<tbody>
<tr>
<td>The life and work at sea can be a challenge for physical and mental health of the sailor.</td>
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<tr>
<td>Many studies and surveys have placed the maritime profession at one of the top places in the charts of stress and responsibility among professions.</td>
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<tr>
<td>Working conditions and life on board the ship are very different from those on land and require a sailor to have not only serious professional training, skills and qualifications but also physical and mental skills and health.</td>
</tr>
<tr>
<td>Living and working away from the coast, home and loved ones in a closed environment and team, the sailor is placed in substandard conditions.</td>
</tr>
<tr>
<td>Requirements for this are much larger.</td>
</tr>
<tr>
<td>Caring for the health and safety of seafarers begins with the selection of students in Maritime Academies, continued during their training, and is the primary responsibility of shipping companies and maritime authorities and marine health professionals.</td>
</tr>
<tr>
<td>The medical examinations and certificates guaranteeing health and medical fitness of seafarers are subject to a number of special international conventions and regulations.</td>
</tr>
<tr>
<td>The laws of most maritime countries require that all seafarers carry a valid medical certificate.</td>
</tr>
<tr>
<td>The International Maritime Organization's (IMO) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended, states that every seafarer holding a certificate issued under the provisions of the Convention, who is serving at sea, shall also hold a valid medical certificate issued in accordance with the provisions of Regulation 1/9 and of Section A-1/9 of the STCW Code.</td>
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<tr>
<td>To set varying widely national fitness standards for seafarers on international guidelines in 1977, (Guidelines for Conducting Pre-sea and Periodic Medical Fitness Examinations for Seafarers) was a first attempt towards harmonization.</td>
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<tr>
<td>The increasing internationalization of shipping makes such harmonization even more desirable.</td>
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<tr>
<td>Medical practitioners performing such examinations should have a clear understanding of the special requirements of seafaring life as their professional decision is often critical for the live of seafarers.</td>
</tr>
<tr>
<td>All concerned should be able to trust a seafarer's medical certificate is having been issued in accordance with the relevant applicable international standards.</td>
</tr>
<tr>
<td>Seafarers are required to undergo medical examinations to reduce risks to other crew members and for the safe operation of the ship, as well as to safeguard their personal health and safety.</td>
</tr>
<tr>
<td>The medical certificate is neither a certificate of general health nor a certification of the absence of illness.</td>
</tr>
<tr>
<td>It is a confirmation that the seafarer is expected to be able to meet the minimum requirements for performing the routine and emergency duties, which a specific to his position on board during the period of validity of the medical certificate.</td>
</tr>
<tr>
<td>Sea profession is related to travel, sometimes long duration and change of microclimate, living conditions and environment. Epidemiological situation at world areas and places is very different and it can also be a factor provoking the health and performance of the sailors.</td>
</tr>
<tr>
<td>Understanding and respect with international health rules and regulations is especially important to ensure the health and life of the crew.</td>
</tr>
<tr>
<td>Under the provisions of the International Convention on Standards of Training and Certification of Seafarers, STCW, 1978, merchant ships have not medical specialists which requires mandatory training for crews in the skills and competencies to provide first aid and medical care on board.</td>
</tr>
<tr>
<td>The order, duration, frequency of this training are the subject of special international maritime conventions and regulations and are performed in certified training centers in many countries all over the world.</td>
</tr>
<tr>
<td>According to the Maritime Labour Convention, 2006, of the International Labour Organisation, as a coherent piece of legislation that covers all modern standards of existing international maritime labor conventions and recommendations, each sailor is entitled to health care, medical care and measures for his welfare.</td>
</tr>
</tbody>
</table>
Panoramic view to STCW medical first aid and medical care courses for maritime students

Author: Dr. Levent Beven, Istanbul Technical University, Maritime Faculty

According to the ICS and BIMCO report, the global supply of seafarers in 2018 was estimated at 1,267,500 of which about 774,000 are officers and 493,500 are ratings.
Medical examination of the health of seafarers – points of view authorities, employers, insurers

Author: Dr. Daniela -David Diculescu, Founder of the DOCTOR 3D Maritime Clinic

TOPICS
1. The Scope of Maritime Health
2. The Stakeholders in Maritime Medicine
3. Types of Seafarers medical exams
4. Who performs the Seafarers’ Medical Exams? Which are the terms to work as a seafarers doctor?
5. The medical exam of Seafarers – Structure, Objectives, Attributes
6. The objectives of Maritime Medicine
7. International Conventions

INTRODUCTION IN MARITIME MEDICINE

Maritime Medicine

MARITIME HEALTH – SCOPE

As at sea / on board:
- Fitness to work – safety & fitness risks
- Safe & healthy working conditions
- Prevention of seafarers risks while at sea
- Passenger risks
- Emergencies (illnesses and injuries)
- Legal regulation and facilities (IMOS)
- Intermedical advice

Seafarers:
- Shore leave care, rehabilitation and repatriation
- Health education and promotion – personal, environmental
- Preventing disease transmission (infectious)
- Long term diseases, retirement and death
Evaluation of occupational risk factors for cardiovascular disease in romanian seafarers

Author: Dr. Loredana Hanzu-Pazara, Ovidius University of Constanta, Faculty of Medicine

Objectives

• The objective of the study was to investigate the presence of cardiovascular changes in seafarers along with the evaluation of traditional cardiovascular risk factors.
Seafarers and the risk of infectious diseases
Authors: Irina Magdalena Dumitru, Lucia Zamfirescu, Ovidius University of Constanța, Clinical Infectious Diseases Hospital

- Seafarers are a unique occupational group in that their travels to different parts of the world expose them to different types of infections.
- They have a pattern of work, with worldwide sourcing of crews, periods at sea remote from medical care, port visits and leave periods in home countries that leads to a unique set of challenges for the—prevention, diagnosis and—treatment of infectious diseases.

Malaria

- Malaria is endemic in 92 countries, with annual peaks of transmission occurring in further eight countries.
- Plasmodium falciparum is the parasite causing the falciparum.
- Over 120 million clinical cases and over 1 million deaths occur in the world each year. Eighty percent of these cases occur in tropical Africa.
- In other parts of the world, the distribution of malaria varies greatly from country to country and within the countries themselves.
Telerehabilitation concept in low back pain in seafarers – from theory to practice
Authors: Iliescu Mădălina-Gabriela, Ionescu Elena-Valentina, Iliescu Dan-Marcel, Ovidius University of Constanta, Faculty of Medicine
Telemedicine between necessity and challenge for the iamu members solution for improve the health of cadets and seafarers
Authors: Zagan R., Raicu G., Constanta Maritime University
A lot of pilot projects, regarding telemedicine, there are now in all EU member states, but telemedicine is not yet entitled to be cited at national level in any one of them.

The aim of this presentation is to help you take
stock of the development of telemedicine, and the necessity of challenge from maritime environment.

It also aims to clarify the problems which are still holding back the development of telemedicine, and to outline a sketch of what the medicine of tomorrow might look like from Maritime Universities.

Lastly, it demonstrates that only an effort on the part of all actors in medical care will be necessary in order for telemedicine to be accepted by all, and that it will be the role of the IMO decision makers to ensure that such mechanisms are developed in such a way as to take into account its multidisciplinary nature.

The European Commission will be active in supporting the deployment of projects that provide Europeans with secure online access to their own health data and enable online health services.

We think that the same vision can be apply on maritime sector, and first step can be made by Maritime Universities together with Medicine Faculty from each country.

EU vision is that e-Health using secure and practical ICT based tools and services European citizens can take greater control of their health: whether it be making an appointment online with their doctor, or getting a second opinion on test results, or learning how to take preventive measures to stay healthy.

This is a feasible step and can make a real difference for the efficiency of health systems, and for patients’ lives.

“The health of seafarers is not only a major concern of seafarers themselves but also a primary concern of the shipowner/operator/manager. With approximately 80% of maritime accidents caused by human error, sickness and injury benefits represent a growing proportion of the shipping industry’s third party liability insurance claims.”

International Labour Organisation

From – ILO 164

* Article 4:
  - Each Member shall ensure that measures providing for health protection and medical care for seafarers on board ship are adopted which are of assisting workers with health protection and medical care as far as possible in that which is generally available to workers ashore.

* Article 7:
  - The competent authority shall ensure by a prearranged system that medical advice by radio or satellite communication to ships at sea, including specialist advice, is available at each time of the day or night.
  - Such medical advice, including the creation of a transmission of medical messages by radio or satellite communication between a ship and those ashore giving the advice, shall be made available free of charge to all those irrespective of the facility in which they are applied.

International Labour Organisation

Telemedicine on sea

Maritime states with a maritime or joint rescue coordination centre (JRCC) are obliged to provide Telemedical Assistance Services (TMAS). Commercial companies also offer TMAS.

One such company is in Seattle, namely Remote Medical International, which launched 2 years ago its RMI Connect service.

The company says it "provides access to physicians for emergency consultation and advice, walks clients through step-by-step treatment, assesses and monitors its members’ medical condition, and coordinates evacuation when necessary.”

Members can contact its Global Coordination Centre by telephone, email, and video.

Statistic regarding TMAS

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<thead>
<tr>
<th>Country</th>
<th>Service Type</th>
<th>Number</th>
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<tbody>
<tr>
<td>Asia</td>
<td>TMAS</td>
<td>50</td>
</tr>
<tr>
<td>Europe</td>
<td>TMAS</td>
<td>30</td>
</tr>
<tr>
<td>South America</td>
<td>TMAS</td>
<td>20</td>
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Difficulties

The seafarer patient has not consulted by the doctor who assist him.

The doctor usually discusses with the officer of the watch, not directly with the seafarer patient.

There is no standardized system for patient ID (and hence lack medical history, no possibility of tracking etc.).
The ability to have visual pictures of the crew man makes an enormous difference when doctors come to deciding whether to treat the illness or injury on board or to recommend a diversion or evacuation.

Affordable, high-quality video conferencing would seem to be the final link in the chain of medical care between ship and shore.

The DigimedeMMA telemedicine service, called Dig+Doc, enables MMA's doctors to perform remote diagnostics and treatment for injured or ill crew members at sea using high-quality video links.

Included in the subscription are video cameras and basic medical sensors, such as thermometer, blood pressure monitor, and electro-cardiogram (ECG).

What is unique about Digimede is that it is optimized for narrowband satellite channels.

This means that you can transmit and receive video and audio in real-time using as small fraction of the bandwidth normally needed for video conferencing.

That of course translates into lower satellite usage costs for ship owners.

The portable telemedicine kits are available in three versions: Digimed Mini, Digimed Vita and Digimed Pro.

The Digimed Mini contains a Windows PC with built-in camera, Bluetooth headset with microphone, WiFi and camera and power adapter contained in a small soft case.

The Digimed Vita includes the same components as well as an EKG sensor in the same case and also includes the Digimed Access dashboard software to allow the device information live to the physician.

The Digimed Pro contains all the above components, as well as other BloodTech sensors including digital thermometer, blood pressure cuff, blood glucose meter and other medical devices in a slightly larger soft case to avoid the physician's view of the patient's vital signs.

All these kits come with a Digimede SecureChat teleconferencing software license and are offered at a very low price point.

The greatest benefit of telemedicine is its ability to prevent the escalation of medical cases.

Ship operations can get the most out of telemedicine by using their subscriptions for non-emergency consultations, trial calls, and every day medical questions.

By accurately assessing and managing a situation via telemedicine, ship operators can prevent costly and avoidable evacuations.

Video has clear advantages in enhancing communication between doctor, patient, and assisting seafarers.

The advantages of video solutions in maritime telemedicine:

- 24/7 accessibility, permanent valid anywhere in the world
- Interaction on a personal level
- Quality of care is ensured by the participation of experts from different fields
- The rapidity of medical diagnosis, independence of timezones availability at night etc.
- Reduced costs in cases where the patient is not necessary to evacuate
- Minor surgery carried out directly on board by the skipper (day surgeries cost of eviction on board = 40,000 USD)
3) Workshop program

**WORKSHOP PRESENTATIONS SESSION**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
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| 11:10 - 11:30 | E-maritime medicine virtual platform for health and medical training of cadets and seafarers  
Roxin C., Zagan E., Constanta Maritime University |
| 11:30 - 11:45 | Maritime professions—requirements for health and medical training of seafarers  
Florence Popescu, Naval Academy, Constanta, Romania |
| 11:45 - 12:00 | Panoramic view in STCW medical first aid and medical care courses for maritime students  
Levent Beven, Istanbul Technical University, Maritime Faculty |
| 12:00 - 12:15 | Medical examination of the health of seafarers – points of view of authorities, employers, insurers  
Dimitrii-Daniel Dănilă, Maritime Medicine Clinic Docer 3D |
| 12:15 - 12:30 | Telemedicine concepts in low cost pain in seafarers – from theory to practice  
Lorcan Madigan, Donostia University, Spain |
| 12:30 - 12:45 | Evaluation of occupational risk factors for cardiovascular disease in Romanian seafarers  
Dr. Lozana Hance-Pusa, Ovidius University of Constanta, Faculty of Medicine |
| 12:45 - 13:00 | Seafarers and the risk of infectious diseases  
Ioana Măgădilă Doina, Lucea Zefiță, Ovidius University of Constanta, Clinical Infectious Diseases Hospital |
| 13:00 - 13:15 | Telemedicine between necessity and challenge for the IAMU members, solutions for improve the health of seafarers  
Zagan Roxin, Iuliu Gabriel, Constanta Maritime University |
| 13:15 - 13:30 | Awarded ceremony |
| 13:30 - 14:30 | Lunch |