



The right to medical assistance for seafarers. Ethical and practical consequences of the introduction of telemedicine to improve healthcare on board ships

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ABSTRACT

Quality and easy access to healthcare is considered a Fundamental Right in most countries. While access to care has progressed, the ethical challenges related with medical error, confidentiality of patient information and risk of technology over-riding human judgement have become important to address. In the case of seafarers, the challenges are compounded by the fact that they spend a significant amount of time on the high seas with no direct access to medical care. With the introduction of Tele-medicine, quality and access to care has improved. However due to the fact that there is no direct patient – doctor contact, ethical issues related to consent and care are important to review to safeguards the interest both the doctor and patient. The gradual introduction of advanced technologies present improved medical assistance to seafarers onboard.

1. Introduction

Merchant ships spend long periods of time on the high seas and get very limited time at port. Ships with less than people onboard are not required to have a doctor onboard. When a medical event occurs onboard the officer in charge of the Sickbay must ensure prompt action is taken. According to the International Labor Organization (ILO), health protection and access to medical treatments should be guaranteed to seafarers in the same way as for people working ashore [1]. The ship owner is primarily responsible for the safety and health of all seafarers on board ship, although the day to day responsibility generally lies on the captain, who should observe the ship-owners reporting procedures [2].

During the voyage, the Captain is responsible for the safety, wellness and running of the ship and her crew. The Captain has been carefully trained over years on the handling and management of the ship. However, there is added responsibilities of providing medical assistance in case of diseases or accidents on board [3]. In 1992, the European Economic Community issued the Directive 92/29/EEC on the minimum safety and health requirements for improved medical treatment on board vessels [4]. According to this Directive, responsibility for the management of medical supplies onboard must be compliant with the regulations and routinely monitored [5]. The medical training to

the Captain must be sufficient to ensure that the captain or officer in-charge can understand the nature of the medical event, take decisions on the next steps and ware of the medical supplies onboard to provide prompt support [6].

The importance of medical care to seafarers was further stressed upon by the International Maritime Organization (IMO) in 2000. The organization of a medical assistance system at sea is essential to alleviate the isolation of the victim (the sick or injured person on board), to avoid, as far as possible, the need for evacuation and to assist Rescue Coordination Centers (RCCs), which are often the first point of contact with the captains in difficulty [7]. In a collaborative maritime tele-medicine scenario, the captain can be considered as the extension of a doctor onboard. The latter will be in contact with the ship by tele-communication systems and should direct medical assistance from his remote site. Each person has the right to access health care and benefits in precarious health situations. The right of equality means that citizens of all nationalities can access health services in whatever conditions they are in.

Another fundamental humanitarian principle is equality, which means equal access in relation to equal health needs. This can be achieved with the right protocols ensuring an appropriate prescription of care and in transparency in the relationships and provision of benefits. Fairness is essentially expressed in the two fundamental ways;

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they being availability of correct information and explicit consent that necessarily must be given by the patient, in every situation. Some exceptions exist, for informed consent, when there is a state of necessity or when the patient cannot express himself (due to pathology or inability).

Telemedicine is a remarkable innovation and is extremely useful where there are limited medical facilities are not available. For seafarers telemedicine can be considered as “the medicine of the future”, allowing them to receive care from any part of the sea. With the growing acceptance and adoption of Tele-medicine one must be able to envision and resolve potential issues due to this relatively new medium of care. The purpose of this work is to evaluate telemedicine-based implementations as technical measures which may improve access to healthcare for seafarers while on active duty.

2. Methodology

Analysis of legal norms and regulations related to general principles of the protection of human rights was the basis of our work. These principles were analyzed in the framework of guidelines of the World Health Organization (WHO), of directives of international institutions (e.g. European Community) and of the laws of individual countries. The Universal Declaration of Human Rights of the United Nation General Assembly issued on 10 December 1948 establishes under the article 25: “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, etc [8]. The right to health includes also the development of systems of fast and urgent medical care intervention in cases of accidents, epidemics and similar health hazards, and the provision of disaster relief and humanitarian assistance in emergency situations [9]. As a consequence of these premises, access to primary health care is the key to attaining a level of health allowing all individuals to lead a socially and economically productive life (article 5) and to contribute to the realization of the highest attainable standard of health [10].

The legal framework for tele-medicine within the European union is ambiguous, however several efforts have been made. The inclusion of telemedicine as a healthcare service in the scope articles of 56 and 57 of the treaty of the Functioning of the European Union (TFEU) and other initiatives are all aimed to turn telemedicine into a standard medical service [11].

Ethical values are the fundamental aspect for the analysis of the above principles and resolution of problems that arise in the biomedical and clinical fields. Discussions on the principles of conflict of interest, malified interest, quality of care and protection by law for both patient and doctor. The documents taken into consideration in our work included international regulations on the right to health care for seafarers. (eg. CHI, 1946; 1978; 2007 and 2008; IMO 2000, Council Directive, 2009; Italian Royal Decree, 1897; ILO, 1958, 1987, 1997 and 1998; Council Directive, 1992; Italian Legislative Decree, 1999; Decree of the Ministry of Health, 2015). Assistance to seafarers will include the protection of the suffering human person when accessing the care, with the protection of the right to self-extermination, to informed consent to confidentiality, as for every patient.

Information shared by Centro Internazionale Radio Medico (International Radio Medical Center, C.I.R.M.) in Rome. C.I.R.M. is the Italian Telemedical Maritime Assistance Service (TMAS) and is probably the organization with the largest experience in the world in providing maritime telemedical assistance [12], helped review some of the underlying hurdles of telemedicine.

3. Results

The first signs of fear of malpractice in medical care and patient confidentiality were mentioned in the Hippocratic oath dating back to the 3rd century. *“Into whatsoever houses I enter, I will enter to help the sick,*

and I will abstain from all intentional wrong-doing and harm, especially from abusing the bodies of man or woman, bond or free. And whatsoever I shall see or hear in the course of my profession, as well as outside my profession in my intercourse with men, if it be what should not be published abroad, I will never divulge, holding such things to be holy secrets ” [13].

For seafarers, the fact that there is not other alternative and time being an essential factor of the outcome it is important to review the laws, ethics that promote and caution the use of tele-medicine.

Social justice: The maritime community should ensure that all means of access to the necessary care are made available. The concept of justice has many variables in the field of health and the word “justice” may have several meanings if referred to the right to health. Different aims that can be pursued are: (i) Provision of the best possible assistance to everyone; (ii) Provision of equal assistance for all; (iii) the freedom of choice by those who provide health care and those receiving it and (iv) the reduction of healthcare costs [14].

Principle of equality: The essential content of the principle of equality in health care [15] is to ensure access to care for all citizens, including seafarers. It also means that the care available on shore should not be comparable to the care the seafarers face [1].

Principle of gratuity. An important aspect is the gratuity of health care services and health protection for the seafarers. This should apply, both onboard ship and ashore in a foreign port. Protection and care on board ships are provided at no cost to the seafarers. The gratuity of public healthcare is emerging as an essential condition for the protection of health of seafarers. To promote the implementation of these principles the provision of the best possible health care should be implemented on board ship. To achieve this goal, a close co-operation between the ship's captain and the TMAS doctor that was contacted is required.

Medical facilities: National laws and regulations state that all ships shall carry a medicine chest, medical equipment and a medical guide [2,4,7,15–19]. Ships carrying 100 or more people and ordinarily engaged on international voyages of more than three days should have a qualified medical doctor who is responsible for the medical care on board. Ships which do not carry a medical doctor are required to have either at least one officer on board who is in charge of medical care and administration of medicines as part of their regular duties or at least one seafarer on board competent to provide medical first aid.

People in charge of medical care on board (and who are not physicians) shall have satisfactorily completed training in medical care, according to the requirements of the 1978 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers [20].

In case of accidents or diseases on board, the captain may ask for help to a Tele-Medical Assistance Service (TMAS). IMO Circular MSC/Circ.960 of 20 June 2000 entitled “Medical Assistance at Sea” [7] considers medical assistance at sea as a fundamental part of rescue operations, as defined by the International Convention on Maritime Search and Rescue (SAR) [21]. As the protection of both passengers and crew is the captain's duty, it is advisable to consult a TMAS to assess the state of health of a person on a ship without a doctor [5].

A fundamental point of the medical relationship between the ship and the TMAS is communication, which can be either in writing and in vocals.

The communication systems currently used by TMAS are:

- E-mail, via satellite connection. This system is most commonly used today as the forwarding rate of the message is much lower compared to Telex. With the use of e-mail, ships can send patient photographs as an attachment, which can be helpful to make proper diagnoses. Privacy issues may be raised in the use of not encrypted e-mail messages for medical purposes.
- Telephone. This communication system has the advantage of real time exchange of information, but can be the cause of misunderstandings due to the quality of the communication, language

barriers, etc. Recording of telephone conversation of telemedical assistance is not required, but for legal and practical problems it would be desirable.

- c. Coastal radio stations. Coastal radio stations may represent the first structure to which captains with medical problems on board address their requests of medical advice. Their role is to be the line between the ship and the TMAS. Unless the ship does not have satellite connections, the role of coastal radio station in medical assistance at sea is of limited relevance [3,22].

In practice the large majority of medical communication is done via telephone or e-mail, where other system are used only rarely. The advantage of text communications is that inquiries and answers are transmitted in written format without interference at the same time. The disadvantage is that the length of messages is in general limited, with the risk of not providing enough information about the patient. On the other hand, this system is not rapid. The advantage of telephone calls is direct communication with the doctor and the medical advice he or she ensures. Satellite communication offers a considerable improvement on radio medical advice. However, the risk of misunderstandings is not negligible. With the old radio contact system, still used a few years ago, the doctor had to make a diagnosis based on the written or verbal information that was transmitted to him. Currently, with the introduction of medical videoconferencing systems, the doctor can make video calls and receive multimedia documents (for example detailed photographs, videos).

Data Privacy Directive: Telemedicine involves circulation of very sensitive data – the patient health information – which is considered as personal information by European law [Telemedicine: The legal framework (or the lack of it) in Europe]. These new directives require that legacy systems be updated to comply with current laws.

4. Discussion

The undeniable value of tele-medicine should cover the challenges to implement them. Seafarers are exposed to a work environment making them vulnerable in case of medical events. To add to the complexity, seafarer of one nationality are often treated by doctors of another nationality, the legal implications in case of adverse events and the legal framework are currently lacking. This leaves room for a wide range of issues and lengthy legal proceedings.

Telemedicine techniques when used in full compliance with regulations, will allow to respect patient's bioethical principles such as the right to privacy, the right to informed consent, the right to be heard by the doctor. Medical advice through a video conferencing system has the advantage of providing the doctor with images in real time, imitating a face-to-face consultation. Even if the physical examination is precluded to the doctor, the use of images and photographs of wounds (as an example) will make the treatment more effective and it will also be possible to have a visive follow-up, or to send the images to medical specialists in real time.

A telemedical consultation begins by the captain collecting the patient's history, tracing the sequence of events related to the injury or illness from the time of occurrence or of the onset of the symptoms. The second stage consists on the physical examination of the patient. The history and the results of the physical examination must be recorded accurately and completely, since this information should be shared by radio or provided to a shore-based physician taking over the case.

While the protocols are well defined the success depends heavily on the medical knowledge and experience of the Captain. This in most cases is limited due to the lack of effective continued training onboard. The Captain must also ensure that all compliances with regard to confidentiality and detailed documentation are maintained.

The principle of bodily self-determination, even in emergency care situations, must be upheld. The last edition of the International Medical Guide for Ships by the World Health Organization [23] dedicates

enough space to informed consent. However, the methods and times with which informed consent should be recorded and obtained are not perfectly clear.

For emergency medicine, the law acknowledges that mechanically imposing the duty of informed consent may be detrimental to the patient's health. The general rule is that, in certain emergency situations, patient consent is presumed to exist for medical treatment that addresses the emergency. Exceptions are represented by an urgent situation, state of necessity and by the unconsciousness of the patient. The premise of this exception is that, when the patient is unconscious and in immediate need of medical care, the duties of disclosure of informed consent imposed by the doctrine are excused because an irreparable harm and even a death may result from hesitation to provide treatment [24].

In these cases, it is assumed that if the patient had been able, he would have agreed to the treatment. On the other hand, each crew member should be informed of his/her right to give or refuse consent to examination and treatment, and of the other rights listed here, when arriving in the sick bay, if his or her condition makes it possible. Giving the crew member a copy of these pages is suggested as a convenient way of doing this. It is not necessary for the patient to sign a document to indicate consent, or for his consent to be witnessed, unless there may be disputes later over whether consent was given.

On asking to patients for the consent to examination or treatment, we must:

- > inform them of what we propose to do. The information given must cover everything you would want to know if you were in the patient's position and you must answer truthfully any question the patient asks make sure the patient understands the information you have given him (for example, if you tell a patient you need to perform a rectal examination, you are responsible for checking that the patient understands what that involves);
- > not use coercion or threats, actual or implied (except a "threat" to impose or maintain medically necessary isolation);
- > be sure that the patient has expressed his consent explicitly (it is never the case that silence implies consent);
- > Consent is not valid, and may not protect a health professional legally if it is too general (agreement to phrases such as "any treatment deemed necessary by the master" does not constitute consent); the consent to examination and treatment should be sought for each new illness.

Right to Access: Seafarers also have the right to read all notes and records made in connection with their treatment. A copy of a patient's medical records should be provided when leaving the ship or going to see a doctor. Another important aspect of medical assistance on board and of the captain-patient relationship is privacy and confidentiality. Everything the captain learns about a patient while caring for them is confidential, or secret. This applies both to patient's words and to things that the captain learns by examining the patient, or by consulting their medical records [25,26].

Good Practice: Even if a patient tells his shipmates some of these things, it is better if the captain avoids discussing them completely. Information about a patient should not be given to others not involved in the patient's care unless it is absolutely necessary. For example, the captain may need to take a decision to divert the vessel to a nearby port. However, only as much information as it is necessary for this decision to be made should be given. Charts and medical records should be kept where visitors cannot read them. It is also necessary to ask the patient before giving information to anyone, even family members [23].

5. Conclusions

Telemedicine presents a unique solution for seafarers seeking medical assistance onboard. The Captain must be authorized and

encouraged to contact a quality TMAS to provide quality care. The foundation of medical decision making is not avoidance of risks, but the prudent assessment of benefits, burdens, and harms, in relation to other ethical principles like respect for autonomy and justice [27].

All documentation of all communications should be always maintained. Even in this remote relationship between a physician and a patient, confidentiality must be guaranteed, and it must be ensured that patient's data will be stored and used for healthcare purposes only [28,29]. The technological interface of medical video conferencing (interactive video, monitoring devices, etc.) brings about a new form of patient involvement and engagement [30].

By introducing a video conferencing system in medical consultation, we will have an important advantage: real-time images of a conversation are sent bidirectionally, imitating a face-to-face consultation as close as possible [31].

In summary, telemedicine fits perfectly in this area, in compliance with existing regulations, provided specific adaptation parallel to the development of technology. Considering that the results of the comparison between telemedicine-consultation and radio-consultation are mainly positive (especially regarding patient-related outcomes), and that consultations via video conferencing or web-messaging may improve patient/physician outcomes as well as cutting costs, we can conclude that it would be useful and effective to implement these technologies to administer health care to seafarers [32,33].

Access to quality healthcare to seafarers at sea is a fundamental right and standing policy. All Flag state regulations stress the need access to good quality care. A standardized policy in telemedicine for merchant ships will go a long way in ensuring the awareness, ease of maintaining compliance and providing the legal framework of security for the doctor and the patient.

Conflicts of interest

Please note that the authors declare no competing interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.marpol.2019.103525>.

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