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MEDICAL ASSISTANCE AT SEA

1 The Maritime Safety Committee, at its seventy-second session (17 to 26 May 2000), noted the general tendency to regard medical assistance at sea as an integral part of rescue and that this approach is consistent with the International Convention on Maritime Search and Rescue (SAR). Noting further that the Convention requires the search and rescue services to perform distress monitoring, communication, co-ordination and search and rescue functions, including provision of medical advice, initial medical assistance or medical evacuation, the Committee approved the attached guidance on Medical Assistance at Sea and Importance of the Role of Telemedical Assistance Services and Medical Assistance at Sea and Maritime Radiocommunications, as set out in annexes 1 and 2, accordingly.

2 Member Governments are invited to use the annexed guidance and bring it to the attention of all parties concerned.

ANNEX 1

MEDICAL ASSISTANCE AT SEA AND IMPORTANCE OF THE ROLE OF TELEMEDICAL ASSISTANCE SERVICES

1 Introduction

1.1 General

There is now a general tendency to regard medical assistance at sea as an integral part of rescue. This approach is consistent with the SAR Convention which provides (Annex, chapter 1, paragraph 1.3.3) that the "search and rescue service" consists of "the performance of distress monitoring, communication, co-ordination and search and rescue functions, including provision of medical advice, initial medical assistance or medical evacuation ...".

It seems important for the International Maritime Organization to take this fact into account and to work, as in its other fields of action, to put in place arrangements and procedures aimed at effective enhancement of the protection of human life at sea.

1.2 Purpose of the circular

An optimal arrangement for medical assistance at sea is based on the following five elements:

- one or more RCCs;
- a telemedical assistance service (TMAS);
- means of intervention at sea;
- shore-based arrangements;
- common operational procedures.

The purpose of this circular is to inform or remind States of the elements of a global system of medical assistance at sea and to encourage those which have not yet done so to set up such a system (which to a large extent uses existing elements), including an officially designated maritime telemedical assistance service.

1.3 General remarks

1.3.1 A system of medical assistance at sea applies in theory to ships that do not have a doctor on board. It may, however, be requested in certain circumstances by a ship's doctor.

1.3.2 In this circular, RCC should be understood to include MRCC (maritime rescue co-ordination centres) and JRCC (joint rescue co-ordination centres of aeronautical and maritime organizations) or even, if applicable, MRSC or JRSC (maritime or joint rescue sub-centres).

1.3.3 Although professional seafarers are the principal beneficiaries of the system of medical assistance at sea, it is also true that in some areas such a system may also benefit passengers on ships that do not satisfy the conditions because they have no doctor on board, as well as pleasure craft.

1.3.4 The system of medical assistance at sea, as described in this circular, does not apply to maritime accidents involving a large number of shipwrecked people or where the rescue proper involves the assistance of medical teams. However, the various elements of the system are normally involved in the case of a serious accident, subject to special procedures.

1.3.5 Sections 2 to 6 below cover the various elements that constitute a global system of medical assistance at sea.

2 RCCs

2.1 As medical assistance at sea is an integral part of rescue, RCCs are a key element in the system, because captains "naturally" call on the RCC when they have a problem that might jeopardize the lives of people on board.

2.2 That is why all RCCs should be able:

- to provide the captain with information to allow him to contact a TMAS;
- then, if medically necessary, to organize an evacuation, to the extent of its capacities;
- failing that, where the TMAS suggests diverting the voyage, to advise the captain of the most suitable port, bearing in mind the condition of the sick or injured person; and
- lastly, to transmit the alert, together with any relevant information, to the shore-based reception facility.

2.3 RCCs should therefore be provided with the necessary instructions and documentation and, in particular, operational procedures for medical assistance at sea, setting out the roles and responsibilities of each partner.

3 The Maritime Telemedical Assistance Service (TMAS)

3.1 The existence of such a service in a system of medical assistance at sea is essential for the following reasons:

- to alleviate the isolation at sea of both the victim (the sick or injured person on board) and the captain responsible for giving treatment;
- to avoid, as far as possible, the need for evacuation, which, although sometimes essential, is by its nature dangerous and expensive; and
- to assist RCCs, which are often the first contact with the captain in difficulty, to take an appropriate decision.

3.2 A TMAS should be officially designated as such by the competent authority in the State concerned so as to:

- appear in official documentation (especially that of IMO); and
- provide a guarantee of competence and quality to potential users.

3.3 The designation should also indicate effective links with one or more RCCs, so that the latter are quite clear as to which RCC they should turn in any particular instance. For the telemedical service, it involves taking medical responsibility for the advice given by its doctors.

3.4 Both for reasons of cost and acquisition of experience by doctors, it is preferable for the TMAS to be provided by as few bodies as possible.

3.5 There may be an advantage in the service being provided through a specialized centre, which could even cover several countries (*e.g.* those sharing a common language).

3.6 It does not matter much whether the designated medical institution is in the public or private sector. The important thing is that it is permanently staffed by doctors qualified in conducting remote consultations and well versed in the particular nature of treatment on board ship.

3.7 The appendix to this annex contains further details of the benefits and effectiveness of a TMAS.

4 Means of evacuation at sea

4.1 The means used for evacuation are generally the same maritime or aeronautical means used for rescue operations. It may be useful in certain circumstances to use a more specialized means of search (e.g. aircraft) to guide the rescue craft responsible for the evacuation.

4.2 The responsible authorities should regard it as desirable to have on board the rescue craft a team that includes either a doctor, or one or two people with appropriate training, when recommended by the TMAS doctor.

5 Shore-based arrangements

Unless the evacuation craft transports the evacuated person directly to a hospital (evacuation by helicopter), it is essential to provide for reception of the sick or injured person and transport from the point of disembarkation to the hospital, including specialized equipment (ambulance) and trained personnel and, if necessary, a doctor. There is nothing specifically maritime about this aspect, but being well prepared to admit the patient to the most suitable medical establishment is essential, if the system is to be fully effective.

6 Operational procedures

It is desirable to have a national reference text that defines the procedures for joint operations by the various partners in medical assistance at sea and their respective responsibilities:

- TMAS: medical advice*, medical advice on evacuation (MEDEVAC) or diversion, liaison with shore-based medical partners in the case of evacuation or diversion;
- RCC: initiation of nautical or aeronautical means of evacuation, nautical advice to the captain when advised to divert on medical grounds, overall co-ordination of the operation, alerting and liaison with the shore-based reception facility;
- means of intervention at sea: evacuation from the ship to the shore by nautical or aeronautical means with a medical or paramedical team where necessary; and
- shore-based arrangements: provision of medical personnel, reception and transport of the patient to hospital by land or aeronautical means with a medical or paramedical team.

* Medical advice (acronym MEDICO) consists of diagnosis and prescription of treatment on board. It may in some cases be given by bodies other than those providing the TMAS, where such advice does not involve evacuation or diversion.

APPENDIX

Objectives, capacities and planning of a TMAS

A1 Objectives of a TMAS in a global system of medical assistance at sea

A1.1 Aid for sick or injured seafarers; aid to captains

The overall objective of a system of medical assistance at sea is to try to provide seafarers with medical care as nearly as possible equivalent to the care they would receive ashore, because:

- the seafarers' profession exposes them to a high risk of accident or sickness at sea; and
- the position of isolation or remoteness is a potentially exacerbating factor in any on-board medical problem.

In the absence of a doctor on board (which is most often the case), the captain is responsible for medical care. However, any medical training he has received is not such as to allow him to treat a patient unaided. That is why telemedical advice (MEDICO) may enable him to provide a good standard of treatment and make the best use of the compulsory medicine chest.

In terms of responsibility, the TMAS doctor has full responsibility for the diagnosis and prescription of treatment, while the captain is responsible for examining the patient, administering treatment and the final decision.

A1.2 A way of avoiding evacuation

For a long time, while not forgetting the few well-established centres of medical advice by radio, *medical assistance at sea* has been synonymous with *evacuation*. Sometimes, however, evacuation is not possible. More often, it is dangerous both for the rescue team (due to the difficulty of the weather or technical conditions), or for the person being assisted (due to his condition). It often presents secondary, but not negligible, problems, linked to the psychological isolation of the patient and the difficulty of repatriating him to his country of origin.

In any case, evacuations are complex and onerous operations for the authorities, albeit essential in some circumstances, and should be reserved for medically justified cases.

A1.3 Aid to decisions by the RCC - need for a link between RCC and the TMAS

Although the ship may call the TMAS directly, RCCs are often the first contact for a captain faced with a medical emergency. They need immediate medical advice and a recommendation for action (which may simply be treatment on board): the TMAS doctor has full authority to recommend evacuation on medical grounds.

The optimal functioning of a global system of medical assistance at sea thus involves co-operation between RCCs and the TMAS, based on confidence in each other. That is why they need to know each other and there are advantages in linking one (or possibly more) RCCs to a single TMAS, and to give official status to the relations between medical and operational partners in the system.

A2 Capacities to be checked by the competent authority in designating a TMAS

A2.1 Continuous staffing

Telemedical advice must be instantly accessible 24 hours out of 24.

The doctor must be available: telemedical advice, even for relatively simple cases, takes the doctor between 15 and 30 minutes. The doctor must therefore be able to free himself from any other activity during that time.

Some cases involve successive consultations during the course of the same day, sometimes seeking advice from another specialist doctor collaborating in the TMAS and/or calls to different operational partners. It is preferable for the same doctor to remain in charge of the case; continuity of treatment must be assured by communication of information to staff between shifts.

A2.2 Medical staff trained in telemedical advice

The doctor must be able to direct the examination of the patient and treatment by his correspondent on board taking into account his level of training. He must be aware of the available treatment on board based on the type of medicine chest. He must adapt his vocabulary to allow him to communicate with the captain. He must be trained in the use of multimedia means to be developed.

A2.3 Medical staff trained in treatment in a maritime environment

There are few pathologies specific to the maritime environment. It is mainly the conditions under which treatment is given and the environment that must be familiar to the doctor. Treatment regimes must therefore take account of the medicines available on board.

Decisions to divert or evacuate must take geographical, meteorological and operational constraints into consideration, as well as the strictly medical justification for the intervention.

A2.4 Adequate documentation and means of communication

The non-medical documentation required by a TMAS relates mainly to the specifically maritime aspects of its work and contact addresses.

The means of communication must include at least one telephone line and easy access to a telex and fax.

A2.5 Development of a maritime medical network

Networking of different countries' TMAS would be useful because of the universal nature of maritime navigation. Real time communication between services are often essential at the operational level and permit harmonization of procedures and joint analysis of epidemiological data.

A3 Planning of a TMAS

A TMAS can be provided by various medical organizations subject to their recognition or designation as official partners of RCCs in the framework of a global system of medical assistance at sea. In some cases, the TMAS may be organized as a national centre (or even one shared by several countries). Such an arrangement has the following advantages.

A3.1 Greater pooling of experience

Providing a larger amount of telemedical advice at sea increases the experience of the medical team in a particular centre. The centralization of information from advice records allows a single epidemiological monitoring of the seafarer population.

A3.2 Provision of a single medical contact for seafarers of a particular nationality or language

The development of modern means of maritime communications allows exchange of data, images, etc. Nevertheless, the dialogue between the doctor and the person responsible for treatment (sometimes the patient himself) remains the essential basis of medical action and benefits from being in the language of the two parties.

The existence of a national reference centre for a given population of seafarers is likely to assist such a dialogue (same language, same cultural approach to the problem, adaptation to national training programmes) and to reinforce the essential relationship of trust between the person responsible for treatment on board, the patient and the doctor.

A3.3 Provision of a single point of contact for other bodies concerned with seafarers' health

The experience gained in a maritime telemedical centre is useful to the national administrations concerned, in developing the content of official medical chests, national operational procedures, safety regulations and training programmes for those responsible for providing treatment.

A3.4 Economies

The need for permanent operation, thus the continuous presence and availability of trained doctors, and specific logistics (documentation, means of telecommunication, computers) involves operating costs which a proliferation of centres would help to swell for no purpose. Wherever possible, sharing medical facilities with an existing structure can help to reduce costs.

It is thus desirable to create a centre providing TMAS within an existing medical establishment (*e.g.* emergency department in a large hospital), so as to have access to facilities already in place: staff, specialised medical services, logistical services.

Care should be taken to ensure the provision of the required facilities (see above), particularly training of the centre's doctors in the special features of medical assistance at sea. Provided that they are available to give telemedical advice at sea, the doctors concerned can have other tasks in the medical establishment if the maritime activity does not occupy them full time.

Finally, it is recommended that a link-up with another State (for example, one with the same language) should be sought, to create a common centre.

ANNEX 2

MEDICAL ASSISTANCE AT SEA AND MARITIME RADIOCOMMUNICATIONS

1 COMMUNICATIONS ARE ESSENTIAL TO TELEMEDICINE AT SEA

1.1 The global system of medical assistance at sea relies heavily on the use of telemedical advice. The various systems of maritime communications must allow access which is:

- permanent
- priority
- free of charge

to the *TeleMedical Assistance Service* – TMAS.

1.2 Telemedical advice is one of the emergency procedures in maritime radiocommunications, in the same way as a call to an MRCC.

1.3 The ship's captain, who is responsible for treatment on board, must be able to access the TMAS of his choice, based on his nationality, the ship's flag and especially the language spoken.

1.4 Communications used for telemedical advice must be subject to the strictest confidentiality and are subject to medical secrecy.

1.5 Recording of the date and time of all TMAS communications and archiving on secure tape will enable essential data to be preserved should they be required in the case of legal proceedings into responsibility. All recorded information is subject to medical secrecy in the same way as the content of a medical file.

2 MEANS OF COMMUNICATIONS

2.1 **Voice communication** is the basis of telemedical advice. It allows free dialogue between the doctor and the person responsible for treatment on board or between doctor and patient and contribute to the human relationship which is crucial to any medical consultation.

2.2 **Text messages** exchanged between the ship and the TMAS by telex are a useful complement to the voice telemedical advice and add the reliability of writing. Capacity for dialogue, however, is limited, and the gain in precision is obtained at the expense of the human relationship which remains essential in an isolated environment.

2.3 **Fax** allows the exchange of pictures or diagrams which can help to identify a symptom, describe a lesion or the method of treatment.

2.4 **Digital data transmission** (photograph or electrocardiogram) provides an objective and potentially critical addition to descriptive and subjective clinical data. This method should be developed in the future¹.

¹ Devices for recording and transmitting electrocardiograms, at a relatively low cost and for use by people who are not doctors are now available on the market and some ships are already equipped with them.

3 MARITIME RADIOCOMMUNICATIONS PROCEDURES FOR TELEMEDICAL ADVICE

3.1 Communications using metric waves (VHF) or hectometric waves (MF) by a contact radio station²

The captain contacts the operator of an accessible radio station in the area where he is located and requests a telemedical advice from the TMAS, usually the reference service for the contact radio station, but may be the ship's reference TMAS, particularly for reasons of language or monitoring the patient. The communication must be routed following the emergency procedure, as a priority and free of charge.

3.2 Communications using decametric waves (HF): decametric stations have a very long range which allows any ship to contact them regardless of their position at sea. Normally, there used to be a national maritime radiocommunication centre using decametric waves. Because of the development of new satellite telecommunications, this type of maritime radiocommunications, which was the basis for the first telemedical advice at sea, is less used. Some national centres have closed down. However, some ships are still only equipped with decametric SSB equipment for long distance communications.

In any event, under the Global Maritime Distress and Safety System (GMDSS), global HF coverage is provided by a number of designated stations (see the GMDSS Master Plan).

It is recommended that agreements between the competent national authorities and station operators should allow transmission of telemedical advice to the ship's reference TMAS following the free, priority, emergency procedures, recognized for medical consultations.

Maritime radiocommunications centres using decametric waves continue to provide a radio telex service used for telemedical advice, with both manual and automatic procedures.

3.3 Inmarsat communications: the various Inmarsat systems offer two abridged *codes*: 32 and 38, which can be used for medical assistance at sea by telephone or telex (telex only for Inmarsat-C):

- code 32 is used to obtain medical advice. Some coast earth stations (CESs) provide a direct link with the reference TMAS for the station or a nearby hospital when this code is used; and
- code 38 should be used when the condition of an injured or sick person on board a ship justifies medical assistance (evacuation to shore or services of a doctor on board). This code allows the call to be routed to the shore-based service or body competent to deal with the situation. Some coast earth stations provide a direct link to the associated rescue co-ordination centres (RCCs) when this code is used.

It should, however, be emphasised, that the capacity to receive communications via these two codes is not compulsory for CES, although more and more of them are now becoming equipped to do so.

Most of the time, the service is free of charge for the ship, under an agreement between the CES operator and the relevant medical authority.

² Contact radio station means either a coastal station, in the normal meaning of the term, or another body such as an RCC.
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4 COMMUNICATIONS BETWEEN THE PARTNERS IN MEDICAL ASSISTANCE AT SEA

Although telemedical advice is primarily based on direct communication between the ship and the TMAS, to function well, the global system of medical assistance at sea involves exchange of information in real time between the various operational and medical partners (* = normal means; ** = content):

- between the TMAS and MRCC:
 - * telephone, fax or telex by public network;
 - ** operational data, confirmation or indication of the medical reasons for intervention;

- between the TMAS and the responsible medical centre (hospital) on shore:
 - * telephone, fax or telex by public network;
 - ** medical information about the patient to prepare the medical intervention team, hospital transport on shore and hospital admission. In return, the TMAS should receive the hospital report necessary to evaluate the telemedical advice;

- between the MRCC and the responsible medical centre on land:
 - * telephone, fax or telex by public network;
 - ** operational information essential for joint intervention by rescue and medical teams;

- between the aeronautical or nautical rescue team, the MRCC (operational contact) and the shore-based medical centre (preparation for admission of the patient):
 - * maritime or specialized means of radiocommunications;
 - ** operational information essential to medical reception on land;

- if applicable, between the TMAS and a body responsible for maintaining seafarers' medical records:
 - * fax, telex, data transmission networks, etc.
 - ** access by TMAS doctor to medical data contained in a computerized file of seafarers' health records, if available.

Exchange of medical information must be restricted to medical correspondents involved in medical assistance at sea, and must be subject to strict respect for medical secrecy.
