

***An Analysis and Evaluation of
International Maritime Medical
Training Standards***

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ABSTRACT

In the world's merchant fleet today most of the medical care and treatment given to seafarers in the event of an accident or illnesses is through "lay medics" (seafarers who have usually had no more than a rudimentary medical training at a nautical institute). There is no requirement for a qualified physician to be present on board a vessel unless the crew exceeds 100 in number: this excludes virtually all modern merchant ships as manning levels are low and continuously falling.

The aim of this study was to comprehensively review the current international medical training standards in various nautical institutes. This was carried out by means of a questionnaire on medical training levels in order to harmonise responses and make analytical comparisons with land-based medical care.

The results from the study indicate that medical training levels for seafarers are fragmented and variable between and within countries. This situation is prevalent although there are prescribed international training standards which are largely ineffective as they cannot be enforced. Furthermore, seafarers are not offered the same quality of medical care which is available to land based occupations.

Therefore it is necessary to re-define and reformulate seafarer medical training to enhance medical care and treatment given to patients at sea.

1. INTRODUCTION

Given the comparatively high level of occupational accidents and illnesses among seafarers in relation to other land based occupations (Otterland 1960, Meisner 1993 and Hansen 1996), one obvious question that may be raised is regarding the adequacy of the medical care and attention which is typically available on ships. Hence this paper will examine the medical training standards for shipboard personnel and compare these with the levels of immediate medical care and attention which can be expected in land based occupations.

Although some preventive measures are taken in the shipping industry to maintain the health standards of crews on board ship, such as pre-medical examinations, accidents and illnesses requiring medical attention will inevitably occur at sea (Goethe 1984). A high quality of standardised maritime medical training is therefore essential to ensure a safer shipboard community as the appropriate level of training and education of ships crews can lead to the successful treatment of a sick or injured crew member. Failure to diagnose correctly or negligent handling of an accident or illness may lead to severe disablement or even death.

Seafarers' primary health care in the world's merchant shipping fleets, despite advances in medicine, has not evolved in parallel with the level of medical care offered to the land based population (Amenta, 1996). Medical services on land are promptly available in the developed world when necessary and in the developing world often within a few hours. Contrast this with shipboard medical care where approximately 95% of all seafarers are employed on a ship without a doctor and are dependent on the elementary medical care of "laymen" who have not had extensive training and education in medicine. This has led to a growing disparity between medical care on land (which is high in standard) and on ships (which is low) this may in part be explained by the rapid improvements in global land based health care.

It is unusual for seafarers who are aboard ship to have access either to a qualified physician or a “paramedic” equivalent. Research vessels, warships and cruise vessels still carry a physician on the ship together with some ships of the former Eastern Bloc countries which have large crews (although this practice is declining). Some of the Latin American countries’ ships carry an *enfermero* who has had additional medical training for sea, while on Russian ships there is a *feldscher* trained for a number of years as a surgical assistant and who is responsible for preventive and curative health care on a ship. US ships in the past have carried *marine physician assistants* who have been given paramedic training for several years and who have provided appropriate health care on board ship (Burchard 1987; Goethe 1990).

On the world’s merchant fleet (greater than 100 gross tonnage) of approximately 62,000 ships (Lloyd’s World Fleet Statistics 1997) there is no requirement for a qualified physician on board ship unless the crew exceeds 100 in number. In all other cases the ship has an obligation to carry a medical attendant on board who is responsible for medical care and treatment on the vessel (ILO Convention 164; article 8, paragraph 1). At present, the person responsible for medical care on the ship is usually the ship’s master or one of the ship’s officers, although this shifts between countries. If medical assistance is required at sea, the medical attendant is typically a “lay person” in relation to a qualified physician or a paramedic. Moreover, he or she is responsible for the patient until they, the patient, are either fully recovered (in the case of a minor illness or injury), or until they are transferred to the nearest port, evacuated by air or evacuated to another ship in the case of a serious illness or injury which in any case may be several days or more away. This is very different to an ambulance personnel who are highly qualified but are only required to assist the patient until they reach a hospital which at the most may be a few hours distance.

In many cases it is true that the shipboard attendant may require the assistance of telemedical services (i.e., radio communication by the shipboard attendant with a shore-based medical practitioner, in a radiomedical centre) in order to seek expert advice. But, while this is an extremely valuable service, it has obvious limitations both in terms of what

can be definitively established in such a telemedical examination, and in the speed and precision with which necessary therapeutic steps may be taken after diagnoses.

In short there are three factors which affect the level of medical care, aboard ships whose crew is less than 100:

1. Level of medical training of the designated medical attendant.
2. Quality and content of the ships medical chest and medical guide.
3. The ability to make effective use of radiomedical services.

Nonetheless, it must be noted that 2 and 3 above are rendered useless if the medical attendant responsible for health care does not have the appropriate knowledge and skills to use effectively the medicine chest and radio medical advice (Goethe 1984). Insufficient or inadequate training renders improved medical equipment and new drugs and supplies on the ship much less useful and even hazardous.

Moreover, within this context, medical training and education requires evaluation since as more information and technology is made available to the ship, the crew member/s on board ship responsible for medical treatment and diagnosis need the competency and skills to interpret it. For example, in the field of telemedicine, technology has been far in advance of the human ability to utilise it correctly. This has been developed to aid correct diagnosis by shore based medical experts at hospitals and at radiomedical centres which provide medical assistance to ships. Although it will be some time before telemedicine is provided on all ships, medical training and education needs to be prepared for such developments.

The fact that the seafaring population appears to be prone to a higher incidence of personal accidents and to special health problems/hazards (Hansen 1996) further underlines the need for an evaluation of medical training.

1.1 Literature

Most of the literature relating to seafarer medical training stresses its variability (Goethe 1984; Herring 1984; Donald & Merkle 1989 and Kirk & Duus 1996). These studies also highlight the problems associated with variable training such as the heavy burden on the person responsible for shipboard medical care and the effects of training on the reliability of what is reported to radiomedical services. A German survey of 10 ships of different nationalities concluded that the standard of medical knowledge varied substantially (Burchard 1987). This is further confirmed by a more recent study carried out by UK P&I Clubs which showed that out of the 3535 officers only 21% had attended first aid courses (UK P&I Club, 1996).

A major problem is the nature of the medical training given to those responsible for shipboard medical care. A number of studies have shown that good training leads to prompt and appropriate action being taken (Saarni 1989; Taylor 1995; Nielsen 1998) and Goethe (1984) suggests that successful treatment can only be achieved via radiomedical services if there is a competent person with the relevant knowledge and skills of basic medicine, who is able to describe symptoms and satisfactorily answer questions from a qualified practitioner. Insufficient training leads to valuable time lost in commencing appropriate treatment (Herring 1984) and ultimately, perhaps to avoidable deaths (Donald & Urner 1989). Kirk et al 1993 conducted a survey on Danish seafarers, which was based on the assumption that 40% of deaths occurring on Danish ships were attributable to illnesses. It was suggested that, if appropriate treatment was available “...at least 10 per cent of these deaths could probably have been avoided.”

The literature also suggests that medical training for shipboard personnel responsible for medical care should be to prepare “lay medicos” to act as the eyes, ears and hands of the radio medical advising doctor (Burchard 1987, Donati 1989 and Kirk & Duus 1996). Several studies also address the importance of refresher training for those responsible for

shipboard medical care. Reinforcement of learned practical skills has been emphasised for the USA by Herring (1984) and in a Danish survey on seafarers health education by Kirk et al 1993. Previously, refresher training has been provided for in an ad hoc manner and usually on a voluntary basis which has relied heavily on the willingness of seafarers to attend the courses and the willingness of the shipowner to pay for the cost of the training (Saarni 1989).

Refresher training is now mandatory since the implementation of EC Directive 92/29/EEC which became effective on January 1 1995 for European member states. Some countries, notably Finland and Denmark have incorporated refresher training into their own training schemes as a result of the EC Directive and in accordance with the international provisions set out in ILO convention 164, Article 9, paragraph 4 and IMO's STCW 1995 convention. Finland has developed a scheme where an initial examination tests existing knowledge of the seafarer, followed by a course with lectures, practical training, follow up activities in an outpatient department of a hospital and a final examination in theory and practice. The training is approximately 50 hours in total (Saarni et al 1997). Denmark, suggests that rather than a refresher course every 5 years, it would be more appropriate to update skills and knowledge at shorter periods as difficult procedures need to be taught more often in order to maintain levels. Overall, they propose three modules of 35 hours arranged at intervals of 2/3 years to give total refresher training of 105 hours in 6-9 years. This refresher training could be carried out at special centres where a health professional environment is present (Kirk & Duus 1996). In the UK, it has been suggested that an open book examination on the ships medical guide is sufficient every 5 years. It is said that refresher courses are impractical due to time constraints for the crews of flags of convenience vessels, who have short leave periods (Taylor 1995).

Very few of the studies reviewed refer to the cost savings to the maritime industry (i.e.,(P & I) protection and indemnity clubs¹) of improved medical training and education. Improved

¹ Protection and Indemnity Club is an association of shipowners who by means of contributions known as calls, provide mutual protection against liabilities not covered by insurance, such as claims for injury to crew.

medical care can lead to a reduction in vessel operating costs as observed by Herring (1984). In the event of a medical emergency, prompt and appropriate action by those responsible for medical care on board ship, can eliminate and reduce unnecessary ship diversions or patient evacuations. Wöhrn (1995) indicates that “personal injuries have become the second most expensive class of claims”. For example in the year 1991/1992 a total of US\$ 418,3 million was paid for all personal injury claims including third party claims. Nielsen (1997) confirms this by indicating that a large proportion of the P &I claims are attributable to shipboard occupational accidents.

On the other hand, Taylor (1995), takes the view that a seriously sick or injured seafarer can only be offered the appropriate treatment at land based hospitals. This is because crews sizes have been dramatically reduced in recent years and therefore he suggests that it is essential for the ship to divert in such instances.

Finally, the need for preventive measures through health campaign awareness has been pointed out in some of the literature reviewed (Saarni 1989; Riesco 1993).

1.2 Aims

This paper shall take as its starting point the admittedly prescriptive view that it is fair and appropriate that seafarers should be entitled to expect the same level of immediate medical care and attention as workers employed in land based industries as far as is reasonably possible. It has been argued that a key component of achieving such a level of care is to ensure that shipboard medical attendants have an appropriate level of training, and it is with this aspect that the rest of the paper will be concerned. The wide variance in the level of training of such attendants as between ships flagged in different states (and even among ships of the same state) will be highlighted. The levels and types of training currently available and/or mandatory in a range of countries will be examined. Training programmes will be

evaluated by comparing them with the training programme of a comparable high quality training for land based medical attendants, - that of the UK's ambulance personnel.²

This study will then identify areas either in courses or training where there are large gaps to be filled, by providing new training and educational methods and practices or a revision and modification of existing courses.

² UK ambulance paramedics are considered to have a high standard of medical training see Appendix 6 & 7 and therefore are used as a comparative group. Note that similar paramedic services in other countries could also be used.

2. CURRENT PRACTICES AND MEDICAL TRAINING STANDARDS AT INTERNATIONAL, REGIONAL LEVEL AND NATIONAL LEVEL

2.1 International

Although there are international training standards, the level of medical and first aid training is diverse. This is largely because the standards are defined in general terms stipulating “minimum” requirements for providing medical care at sea. Moreover, these standards are determined by the International Maritime Organisation (IMO) and the International Labour Organisation (ILO) who do not have powers of enforcement or the organisational capacity to monitor standards. Countries that ratify IMO/ILO standards, do not necessarily adhere to them. Minimum requirements are also open to interpretation and individual countries can implement training courses according to how they construe the standards. Nonetheless, the provisions of the International Maritime Organisation and the International Labour Organisation are useful in helping to set a common baseline of maritime medical training standards which can be incorporated into appropriate training manuals and courses for those providing medical training on board ships. There are the joint IMO/ILO Guidelines (IMO/ILO Joint Document 1985) for medical training, ILO Convention 164 on Health Protection and Medical Care of Seafarers 1987, and the revised STCW 95 which all provide training requirements for medical care on board ship. In the IMO recommendations prepared jointly with the ILO, the medical training is divided into three levels:-

Medical Emergency - Basic Training

1. “The first basic level of instruction should be given to all seafarers for service on seagoing ships early in their vocational training, and preferably during pre-sea training if given, to enable them to take immediate action upon encountering an accident or other medical emergency. The ... syllabus is intended to enable any crew member to take basic immediate action at the scene of an accident or other medical emergency until the arrival of a person with first aid skills or the person in charge of medical care on board.

Medical Emergency - First Aid

2. This second level training syllabus is intended to give specified crew member or members elementary training in medical care to enable them to take immediate effective action in the case of accidents or illnesses likely to occur on board ship. The syllabus is intended to equip specified crew member or members with knowledge of first aid, and is based on the assumption that there may also be on board a person with more advanced training in medical care and techniques... The identity or rank of the “specified crew member or members” may vary according to national agreements, but under certain systems of certification all officer trainees are required to undergo training in first aid at first certificate level. The syllabus is intended to cover the subjects contained in the first aid section of the International Medical Guide for Ships [IMGS]³ or similar national medical guide. ... the ... training is intended for personnel regardless of the type of ship or trade in which they may be engaged.

Medical Care

3. Third level training syllabus is for more advanced medical training based on the IMGS or similar national medical guides and enables specified crew member or members to participate effectively in co-ordinated schemes for medical assistance on ships at sea and to provide the sick or injured with a satisfactory standard of medical care while they remain on board.

Where practicable, this training may include practical training at a hospital or similar establishment.”⁴

The IMO model courses⁵ prepared on the basis of those recommendations provide instructions on the subjects⁶ and the number of hours of the lessons and practical exercises. The training programme of the IMO also recommends follow-up training at a five year interval for persons responsible for ship’s medical treatment.

The Health Protection and Medical Care (Seafarers) Convention, 1987 (No. 164) hereinafter referred to as ILO Convention 164 which came into force in 11 January

³ See Bibliography.

⁴ See Joint ILO/IMO International Training Guide 1985.

⁵ There are three courses. IMO 1.13 Medical Emergency - Basic Training consisting of 6.5 hours of theory and 5.5 of practical totalling 12 hours. IMO 1.14 Medical Emergency - First Aid consisting of 12.25 of theory and 8.75 of practical totalling 21 hours and IMO 1.15 Medical Care consisting of 29.5 hours of theory and 10.5 of practical totalling 40 hours

⁶ For more details see Appendix 3 of the Joint ILO/IMO Document for Guidance, 1985.

1991 deals with the provision of medical training for seafarers. The training levels of the convention are based on the 1985 recommendations by the ILO/IMO. Article 4 (b) of the Convention suggests that measures should be taken to ensure that health protection and medical care should be comparable to that which land based workers receive. Furthermore, Article 4(e) implies that measures providing medical care and health protection for seafarers:-

“(e) are not limited to treatment of sick and injured seafarers but include measures of a preventive character, and devote particular attention to the development of health promotion and health education programmes in order that seafarers themselves may play an active part in reducing the incidence of ill-health among their number.”

Article 5 mentions that it is essential for ships bound by ILO Convention 164 to carry a medicine chest on board. It also mentions how the contents are determined, through various guides, lists and approved methods of treatment. The inspection, restocking, checking the expiry dates, labelling of medicines and the provision of specific drugs when ships are carrying dangerous goods is provided for by this article.

Article 6 requires that all ships bound by the Convention carry a medical guide. This guide details and demonstrates the use of the medicine chest both with and without the assistance of a radio medical link by persons who are responsible for medical care on board a ship who are not doctors. The medical guide which is adopted by the relevant authority also takes into consideration international recommendations and guides.

The provision of radiomedical assistance is detailed in Article 7 of the Convention. In this article it is interesting to note that in paragraph 5:-

“The competent authority shall ensure that (land based) doctors providing medical advice...receive appropriate training and are aware of shipboard conditions.”

In this Convention shorebased doctors who provide medical assistance through radio medical centres are required to attain a certain level of training which can assist them when diagnosing or prescribing treatment to a patient on board from a distance.

The provisions laid out in Articles 8 and 9 of ILO Convention 164 are the most relevant to medical training of seafarers responsible for medical care on board ship.

Article 8 refers to the conditions under which ships would be required to carry a medical practitioner:-

“1. All ships...carrying 100 or more seafarers and ordinarily engaged on international voyages of more than 3 days’ duration shall carry a medical doctor as a member of crew responsible for providing medical care.

2. National laws or regulations shall determine which other ships shall be required to carry a medical doctor as a member of crew, taking into account, inter alia, such factors as the duration, nature and conditions of the voyage and the number of seafarers on board.”

Article 9 then specifies who shall be responsible for medical care on board ship, on vessels where there are no qualified practitioners, and the level of training which they are required to complete:-

“1. All ships... which do not carry a doctor shall carry as members of the crew one or more specified persons in charge of medical care and administering of medicines as part of their regular duties.

2. Persons in charge of medical care on board who are not doctors shall have satisfactorily completed a course approved by the competent authority of theoretical and applied training in medical skills. This course shall comprise-

a) for ships of less than 1,600 gross tonnage which ordinarily are capable of reaching qualified medical care and medical facilities within eight hours, elementary training which will enable such persons to take immediate, effective action in case of accidents or illnesses likely to occur on board ship and to make use of medical advice by radio or satellite communication;

b) for all other ships, more advanced medical training, including practical training in the emergency/casualty department of a hospital where practicable and training in life saving techniques such as intravenous therapy, which will enable the persons concerned to participate effectively in co-ordinated schemes for medical assistance to ships at sea, and to provide the sick or injured with a satisfactory standard of medical care during the period they are likely to remain on board. Wherever possible, this training shall be provided under the supervision of a physician with a thorough knowledge and understanding of the medical problems and circumstances relating to the seafaring profession., including expert knowledge of radio or satellite communication medical services.

3. The courses referred to in this Article shall be based on the contents of the most recent edition of the *International medical guide for ships*, the *Medical first aid guide for use in accidents involving dangerous goods*, the *Document for guidance - An international maritime training guide* published by the International Maritime Organisation, and the medical section of the *International code of signals* as well as similar national guides.

4. Persons referred to in paragraph 2 of this Article and such other seafarers as may be required by the competent authority shall undergo refresher courses to enable them to maintain and increase their knowledge and skills and to keep abreast of new developments, at approximately five-year intervals.

5. All seafarers, during their maritime vocational training, shall receive instruction on the immediate action that should be taken on encountering an accident or other medical emergency on board.

6. In addition to the person or persons in charge of medical care on board, a specified crew member or crew members shall receive elementary training in medical care to enable him or them to take immediate effective action in the case of accidents or illnesses likely to occur on board ship.”

The International Standards of Training, Certification and Watchkeeping Convention 1978 now amended to STCW 95 has set standards for minimum medical training requirements, with the highest level of medical training for master mariners and chief mates and a lower level first aid training for all other seafarers. These are mandatory and applicable to medical first aid and medical care to be given on board ship.

Attachment 1 to the Final Act of the 1995 STCW Conference, Regulation VI/4 provides minimum requirements relating to medical first aid and medical care.

“Regulation VI/4

Mandatory minimum requirements relating to medical first aid and medical care

1. Seafarers designated to provide medical first aid on board ship shall meet the standard of competence in medical first aid specified in section A-VI/4, paragraphs 1 to 3 of the STCW Code.
2. Seafarers designated to take charge of medical care on board ship shall meet the standard of competence in medical care on board ships specified in section A-VI/4, paragraphs 4 to 6 of the STCW Code.

Where training in medical first aid or medical care is not included in the qualifications for the certificate to be issued, a special certificate or documentary evidence, as appropriate, shall be issued indicating that the holder has attended a course of training in medical first aid or in medical care.

Section A-VI/4

Mandatory minimum requirements related to medical first aid and medical care

Standard of competence for seafarers designated to provide medical first aid on board ship.

1. Every seafarer who is designated to provide medical first aid on board ship shall be required to demonstrate the competence to under the tasks, duties and responsibilities listed in column 1 of table A-VI/4-1⁷.

⁷ See Appendix 1 Table A-VI/4-1 Column 1.

2. The level of knowledge of the subjects listed in column 2 of table A-VI/4-1⁸ shall be sufficient to enable the designated seafarer to take immediate effective action in the case of accidents or illness likely to occur on board ship.⁹
3. Every candidate for certification under the provisions of regulation VI/4, paragraph 1 shall be required to provide evidence that the required standard of competence has been achieved in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-VI/4-1.¹⁰

Standard of competence for seafarers designated to take charge of medical care on board ship.

4. Every seafarer who is designated to take charge of medical care on board ship shall be required to demonstrate the competence to undertake the tasks, duties and responsibilities listed in column 1 of table A-VI/4-2.¹¹
5. The level of knowledge of the subjects listed in column 2 of table A-VI/4-2¹² shall be sufficient to enable the designated seafarer to take immediate effective action in the case of accidents or illness likely to occur on board ship.¹³
6. Every candidate for certification under the provisions of regulation VI/4, paragraph 2 shall be required to provide evidence that the required standard of competence has been achieved in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-VI/4-2.¹⁴

Chapter VI, Section A-VI/1 under Basic Training (2.1.1.3) of the STCW 95 code includes amongst its requirements the following elements of basic medical training:-

“2.1 receive appropriate training approved basic training or instruction in:

...

⁸ See Appendix 1 Table A-VI/4-1 Column 2.

⁹ IMO Model Course 1.14 - *Medical Emergency - First Aid* may be of assistance in the preparation of courses.

¹⁰ See Appendix 1 Table A-VI/4-1 Column 3 & 4.

¹¹ See Appendix 2 Table A-VI/4-2 Column 1.

¹² See Appendix 2 Table A-VI/4-2 Column 2.

¹³ IMO Model Course 1.15 - *Medical Care* may be of assistance in the preparation of courses.

¹⁴ See Appendix 2 Table A-VI/4-2 Column 3 & 4.

.1.3 elementary first aid as set out in table A-VI/1-3¹⁵, and

...

.2 be required to provide evidence of having achieved the required standard of competence to undertake the tasks, duties and responsibilities listed in column 1 of tables ... A-VI/1-3... within the previous five years through;

.2.1 demonstration of competence, in accordance with the methods and the criteria for evaluating competence tabulated in columns 3 and 4 of those tables; and

.2.2 examination or continuous assessment as part of an approved training programme in the subjects listed in column 2 of those tables.

3. The Administration may, in respect of ships other than passenger ships of more than 500 gross tonnage... if it considers that a ship's size...are such as to render the application of the full requirements of this section unreasonable...exempt to that extent the seafarers on such a ship or class of ships from some of the requirements, bearing in mind the safety of the people on board..."

2.2 Regional

The European Union (EU) has also established standards for medical care at sea through a directive on a regional basis. The EU Directive applies to all EU member states and came into force on December 31, 1994.

The European Council Directive 92/29/EEC of 31st March 1992 (on the minimum safety and health requirements for improved medical treatment on board vessels) gives instructions on the required range of drugs and medical instruments on board ship in Article 2 of the Directive. Article 6 which provides for shipboard familiarisation training of the doctors at radiomedical centres. In addition to the basic training given at the maritime colleges, seafarers must be provided with further medical training at intervals of not more than five years. Article 5 provides for information and training:

¹⁵ See Appendix 3 Table A-VI/1-3.

“Each member state shall take the measures necessary to ensure that:

1. medical supplies are accompanied by one or more guides to their use including instructions for use at least the antidotes required in Appendix II section III,¹⁶

2. all persons receiving professional maritime training and intending to work on board ship have been given basic training in the medical and emergency measures to be taken immediately in the event of an accident or serious medical emergency;

3. the captain and any worker/s to whom he delegates the use of the medical supplies pursuant to Article 4(1)(b) (management of the medical supplies is placed under the responsibility of the captain) have received special training updated periodically, at least every five years, taking into account the specific risks and needs connected with the different categories of vessels in accordance with the general guidelines set out in Appendix V.

Appendix V

MEDICAL TRAINING OF THE CAPTAIN AND DESIGNATED WORKERS

(Article 5(3))

- I.
 1. Basic understanding of physiology, symptomatology and therapeutics.
 2. Elements of preventive medicine, notably individual and collective hygiene, and elements of possible prophylactic measures.
 3. Ability to perform basic types of treatment and supervise disembarkation at sea.
 4. Detailed knowledge of how to use the various remote medical consultation facilities.
- II. This training should take account of the programmes of instruction detailed in relevant recent international documents.

¹⁶ See Appendix 4

2.3 National

Nation states also have their various medical training regulations. In order to establish provisions, a questionnaire was designed for nautical colleges and institutes about medical training for seafarers by the Institute of Occupational Health in Turku, Finland.¹⁷

¹⁷ Further details relating to the questionnaire can be found in the Methods section

3. METHOD

A questionnaire study was thought to be appropriate in order to harmonise responses, with a view to making an analytical comparison rather than obtaining ad hoc responses from different countries which would be difficult to interpret. The questionnaire (see Appendix 5) is divided into three sections reflecting different levels of training for different ranks of seafarers in accordance with the three International Maritime Organisation course models:-

1. Medical training of ships masters and/chief mates this corresponds with the Course model 1.15 on Medical care
2. Medical training of ships officers corresponds with the course model 1.14 on Medical emergency - first aid
3. Basic first aid training for seafarers corresponds with the course model 1.13 on medical emergency - basic training.

Questionnaires were sent to 60 maritime training institutions world-wide. Within each country the questionnaire was sent to a number of training colleges. However, in most cases only one training college has responded from each country and therefore those colleges who have responded are not necessarily representative of the training standards for the whole country.¹⁸ The overall response rate was 50 %. Responses were analysed to identify the subjects or topics being taught under the headings set out in the questionnaire, the number of hours allocated for the various types of training given, the division of hours between theory and practice, printed material, equipment and qualification of lecturers giving the medical training and specific courses. The questionnaire has further been analysed according to the three levels of training stated above, and also according to the printed material, equipment and qualification of lecturers giving the medical training and specific courses.

¹⁸ Note that for some countries, more than one training institution has responded and these have been included under the country heading in Tables 1.1-1.3.

There were difficulties in harmonising responses. Some countries only offer one or two levels of training, a combination of all three or in some instances provided material which does not correspond with the questionnaire but outlines the level of medical training in their institution. Regarding the latter, a separate compendium on Maritime Medical Training has been compiled giving the additional information which some institutions have provided and the medical training levels in others.¹⁹

Other limitations of the questionnaire are that the breakdown of hours per subject and the total number of hours for theory and practice sometimes varied at each level of training. Possible explanations for this are that incorrect calculation of hours, or in the case of a higher number of total hours the institute may teach subjects which are not included in the questionnaire. The only number of hours specified under the subjects headings are those actually completed in the questionnaires, in all other cases only total number of hours are specified. Some countries have not noted the number of hours under the subject headings but indicated that they do teach the particular topic and in other cases blanks have been left. Moreover, under some of the general subject headings, institutions indicated that they did not teach all the procedures. For example, under human anatomy and bodily functions an institution may not teach about the central nervous system.²⁰

¹⁹ It should be noted that a compendium to this study was compiled because some countries could not provide information on their training courses under the headings in the questionnaire as the structured of their courses was different to that of the questionnaire.

²⁰ Some questionnaires sent and some responses received have had to be translated hence some level of error has to be allowed in the translation and re-translation back to English. Another factor which may influence the quality of the responses is the reliability of the recipients understanding of the questionnaire (i.e. where they would have had some difficulties understanding written English).

4. RESULTS

Table 1.1 presents an overview of the Level of Basic First Aid Training for seafarers in the respondent countries and Table 1 below further highlights the variation in hours under each of the principal subject headings. Table 2.1 and 3.1 also give an overview of levels of training but for Ship's officers and Ship's Master's and Chief Mates respectively, while Tables 2 and 3 illustrate the variances in the number of hours of training under different subjects.

Table 1 Variations in training hours under subject headings at Basic First Aid Level

Subject	Range of Hours
General principles	0.5 - 6.0
Human anatomy	0.0 - 20.0
Positioning of an injured person	0.0 - 6.0
Management of Shock	0.5 - 5.0
Resuscitation	1.0 - 8.0
Bleeding	1.0 - 6.0
Burns	0.5 - 6.0
Evacuation	0.0 - 4.0
Theory	8.0 - 49.50
Practical	0.0 - 14.0
Additional Practical	0.0 - 16.0
Total	8.0 - 73.50

Table 1.1

Basic First Aid Training for Seafarers									
Country	General Principles	Human Anatomy	Positioning of an Injured Person	Management of Shock	Resuscitation	Bleeding	Burns	Evacuation	Theory
Algeria	0.50	1.00	1.00	2.00	1.00	1.50	1.00	1.50	9.50
Argentina	1.00	2.00	1.50	1.50	3.00	1.00	2.00	1.50	13.50
Bangladesh	0.50	1.00	1.00	2.00	1.00	1.00	2.00	1.00	9.50
Belgium	1.50	5.00	1.00	3.00	3.50	1.50	1.50	1.00	12.00
Canada	1.00	0.00	0.00	1.00	3.00	2.00	1.00	0.00	8.00
China	2.00	1.00	1.00	1.50	4.00	2.00	2.00	1.00	14.50
Denmark	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Finland									
<i>Nautical College 1</i>	2.00	0.50	1.00	1.00	3.00	1.00	4.00	1.00	13.50
<i>Nautical College 2</i>	5.00	10.00	6.00	4.00	4.00	3.00	4.00	4.00	40.00
<i>Nautical College 3</i>	2.00	1.00	1.00	1.00	3.00	2.00	2.00	2.00	14.00
<i>Nautical College 4</i>	3.00	3.00	1.50	1.50	4.00	1.50	3.00	1.50	19.00
France	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Germany¹	No training at this level								
Ghana	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	16.00
India	2.00	2.00	1.00	0.50	1.00	1.00	0.50	0.25	8.25
Japan¹									
<i>Nautical College 1</i>	No training at this level								
<i>Nautical College 2</i>	All three level of training combined to give 120 hours of training								
Mexico	2.00	4.00	1.00	1.00	2.00	1.00	1.00	2.00	14.00
Netherlands	1.00	2.00	1.00	1.00	2.00	1.00	2.00	1.00	11.00
Pakistan	No training at this level								
Panama ²	3.00	3.00	3.00	2.00	6.00	3.00	4.00	1.00	25.00
Philippines	3.00	1.00	*	1.00	4.00	2.00	2.00	1.00	14.00
Poland	2.00	20.00	2.00	2.00	3.00	3.00	3.00	2.00	37.00
Portugal	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Russia	0.50	1.00	1.00	2.00	1.00	1.50	1.00	1.50	9.50
Spain	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Thailand	1.00	3.00	1.00	1.00	2.00	1.00	1.00	1.50	11.50
U.K.	1.25	2.00	2.25	1.00	2.25	1.25	1.75	1.25	13.00
U.S.A.									
<i>Nautical College 1</i>	6.00	10.00	2.00	3.00	4.00	3.00	3.00	2.00	33.00
<i>Nautical College 2</i>	2.50	16.00	4.00	5.00	8.00	6.00	6.00	2.00	49.50

() Denotes Total Different from that which is stipulated in the questionnaire

¹ See Compendium for further details. A Compendium accompanying this publication can be obtained upon request.

² Panama: course is combined for first level, officers and masters

* Positioning of an injured person taught under general principles

Note: Each row in the table represents one training institution's response

From Table 1 it is evident that the largest disparities in the number of hours are in human anatomy, theory and in the total number of hours taught at this level. Similarly, in Table 2 the greatest variances are under emergency, theory, practical, additional practical and the total number of hours taught at the ship's officers level.

Table 2 **Variations in training hours under subject headings at Ship's Officers Level**

Subject	Range of Hours
Emergency	0.0 - 70.0
Ship's Medical Chest	0.0 - 10.0
Human Anatomy	0.0 - 10.0
Examination of a Patient	0.0 - 6.0
Poisoning on Board Ship	0.0 - 6.0
Burns	0.0 - 13.0
Fractures	0.0 - 10.0
Trauma of the Spine	0.0 - 8.0
Medical Consultation	0.0 - 4.0
Theory	0.0 - 119.0
Practical	0.0 - 90.0
Additional Practical	0.0 - 43.0
Total	13.0 - 160.0

Table 2.2

Medical Training of Ship's Officers													
Country	Emergency	Ship's Medical Chest	Human Anatomy	Examination of a Patient	Poisoning On Board Ship	Burns	Fractures	Trauma of the Spine	Medical Consultation	Theory	Practical	Additional Practical	Total
Algeria	Training currently not offered at this level												
Argentina	8.00	2.00	3.50	1.00	1.50	3.00	2.00	3.50	1.50	26.00	25.00	0.00	51.00
Bangladesh	22.00	2.00	1.00	1.00	0.50	2.00	0.50	2.00	1.00	32.00	0.00	4.00	36.00
Belgium	Masters and Officers all follow the same course ¹												
Canada	2.00	2.00	3.00	1.00	1.00	1.50	2.50	2.00	1.00	16.00	N/S	0.00	16.00
China	4.00	1.00	1.00	0.50	3.00	2.50	0.50	2.00	0.50	15.00	4.00	0.00	19.00
Denmark	2.00	5.00	3.00	6.00	2.00	2.00	2.00	2.00	4.00	28.00	15.00	4.00	47.00
Finland													
Nautical College 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	10.00	25.00
Nautical College 2	6.00	6.00	8.00	2.00	2.00	4.00	4.00	4.00	3.00	39.00	15.00	10.00	64.00
Nautical College 3	0.00	8.00	6.00	2.00	0.00	0.00	4.00	1.00	2.00	23.00	15.00	10.00	48.00
Nautical College 4	4.00	4.00	3.00	2.00	2.00	4.00	3.00	2.00	2.00	26.00	15.00	10.00	51.00
France	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	45.00
Germany ¹	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	70.00	90.00	0.00	160.00
Ghana	1.50	1.00	3.00	2.00	2.00	3.00	1.50	3.00	3.00	20.00	5.00	0.00	25.00
India	No training at this level												
Japan													
Nautical College 1	12.00	4.00	10.00	0.00	6.00	8.00	3.00	6.00	0.00	49.00	8.00	43.00	(109.00)
Nautical College 2	All three level of training combined to give 120 hours of training												
Mexico	4.00	4.00	4.00	2.00	2.00	2.00	N/S	2.00	2.00	22.00	5.00	2.00	29.00
Netherlands	2.00	1.00	2.00	2.00	1.00	4.00	4.00	0.50	0.50	17.00	3.00	0.00	20.00
Pakistan	1.50	2.00	2.50	1.50	2.50	2.00	1.00	2.75	1.00	16.75	1.75	1.00	19.50
Panama	Training course is an integrated course for all three levels												
Philippines	Training currently not offered at this level												
Poland	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	53.00	37.00	0.00	90.00
Portugal	10.00	1.00	4.00	4.00	3.00	2.00	4.00	4.00	3.00	28.00	10.00	0.00	38.00
Russia	2.00	0.75	2.50	1.50	1.50	2.75	2.00	2.00	1.00	16.00	7.50	8.75	32.25(76.00)
Spain	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	30.00
Thailand	1.00	2.00	3.00	1.00	1.00	2.00	1.00	1.00	1.00	13.00	0.00	0.00	13.00
U.K.	No training at this level												
U.S.A.													
Nautical College 1	45.00	4.00	10.00	4.00	1.00	13.00	3.00	3.00	1.00	84.00	10.00	0.00	94.00
Nautical College 2	70.00	10.00	8.00	5.00	2.00	4.00	10.00	8.00	2.00	119.00	16.00	16.00	151.00

() Total Different from Questionnaire

¹ See Compendium. A Compendium accompanying this publication can be obtained upon request.

Note: Each row in the table represents one training institution's response

Table 3 highlights the greatest variances in the number of training hours taught at Ship's Masters and Chief Mates level in the repeat of skills, recognition of diseases, theory, practical and totals.

Table 3 Variations in training hours under subject headings at Ship's Master and Chief Mates Level.

Subject	Range of Hours
Repeat of Skills	1.0 - 70.0
Treatment of Injuries	0.5 - 8.0
Facial Injuries	0.5 - 4.0
Bleeding	0.5 - 2.5
Burns	1.0 - 4.0
Fractures	1.0 - 8.0
Wounds	1.0 - 8.0
Pain Relief	0.5 - 8.0
Acute Abdominal Pain	0.5 - 50.0
Recognition of Diseases	5.0 - 90.0
General	0.5 - 4.0
Radiomedical Consultations	0.0 - 2.0
Evacuation	0.0 - 1.0
Transportation	0.0 - 2.0
Death at Sea	0.0 - 3.0
Laboratory Tests	0.0 - 1.0
Training in Hygiene	0.0 - 3.0
Prevention of Diseases	0.0 - 11.0
Ship's Medicine Chest	0.5 - 8.0
Theory	22.25 - 257.0
Practical	0.0 - 150.0
Additional Practical	0.0 - 20.0
Total	26.25 - 289.0

Table 3.3																							
Medical Training for Ship's Master and Chief Mates																							
Country	Repeat of Skills	Treatment of Injuries	Facial Injuries	Bleeding	Burns	Fractures	Wounds	Pain Relief	Acute Abdominal Pain	Recognition of Diseases	General	Radio Medical Consultations	Evacuation	Transportation	Death at Sea	Laboratory Tests	Training in Hygiene	Prevention of Diseases	Ship's Medicine Chest	Theory	Practical	Additional Practical	Total
Algeria	Currently no training offered at this level																						
Argentina	There is no specific training at this level it is the same as the Ship's Officer Training																						
Bangladesh	2.00	2.00	0.50	1.00	2.00	2.00	1.00	0.50	1.00	5.00	0.50	1.00	0.50	0.50	0.50	0.50	0.50	0.25	1.00	22.25	0.00	4.00	26.25
Belgium	1.00	2.50	1.00	2.50	3.00	5.00	2.00	1.00	1.00	21.00	1.50	1.50	1.00	1.00	0.50	0.00	3.00	11.00	3.00	62.50	150.00	0.00	(243.00)
Canada	No training offered at this level																						
China	No training offered at this level																						
Denmark	N/S																					80.00	
Finland	N/S																						
Nautical College 1	N/S																						
Nautical College 2	2.00	3.00	1.00	2.00	2.00	4.00	6.00	2.00	6.00	16.00	2.00	2.00	1.00	1.00	3.00	1.00	1.00	1.00	8.00	64.00	15.00	20.00	99.00
Nautical College 3	N/S																						
Nautical College 4	2.00	3.00	1.50	1.50	1.50	3.00	4.00	1.00	3.00	14.00	1.50	1.00	0.50	0.50	0.50	0.50	1.00	3.00	43.50	10.00	10.00		63.50
France	N/S																			25.00	20.00	N/S	45.00
Germany ¹	There is no specific training at this level it is the same as the Ship's Officer Training																						
Ghana	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.50	1.00	1.00	1.00	2.00	40.50	11.00	0.00	51.50
India	No training at this level																						
Japan ¹	The training at this level is given on the job (OJT)																						
Nautical College 1	The training at this level is given on the job (OJT)																						
Nautical College 2	All three levels combined to give 120 hours of training																						
Mexico	4.00	4.00	3.00	2.00	2.00	4.00	8.00	1.00	4.00	23.00	4.00	0.00	0.00	0.00	1.00	0.00	3.00	2.00	2.00	67.00	33.00	12.00	112.00
Netherlands	1.00	0.50	0.50	1.00	1.00	1.00	2.00	0.50	4.00	16.00	0.50	0.50	0.25	0.25	0.25	0.00	0.50	0.50	0.50	30.75	3.00	0.00	33.75
Pakistan	No training offered at this level																						
Panama	Training course as combined course for all three levels																						
Philippines	No training offered at this level																						
Poland ¹	There is no specific training at this level it is the same as the Ship's Officer Training																						
Portugal	There is no specific training at this level it is the same as the Ship's Officer Training																						
Russia	2.50	6.00	1.00	1.50	2.75	2.00	1.50	0.25	0.50	18.00	2.00	1.00	1.00	0.00	0.25	0.25	3.00	1.25	1.75	46.50	18.50	18.75	83.75
Spain ²	N/S																						
Thailand	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	7.00	1.50	1.00	1.00	1.00	1.00	0.50	1.50	1.00	2.00	28.50	N/S	5.00	33.50
U.K.	3.50	2.50	0.75	0.50	2.00	1.25	2.25	0.50	1.00	5.25	1.00	0.75	0.75	0.50	0.75	0.50	0.00	0.75	1.50	26.00	6.00	0.00	32.00
U.S.A.	N/S																						
Nautical College 1	50.00	3.00	4.00	2.00	3.00	6.00	4.00	1.00	3.00	17.00	1.00	1.00	1.00	1.00	0.00	0.25	1.00	0.50	3.00	101.75	18.00	0.00	119.75
Nautical College 2	70.00	8.00	2.00	2.00	4.00	8.00	6.00	8.00	50.00	90.00	2.00	1.00	1.00	2.00	0.00	1.00	0.00	0.00	2.00	257.00	16.00	16.00	289.00

¹ See Compendium. A compendium accompanying this publication can be obtained upon request.

² Spain also has medical care course for catering department of 20 hours and special training for those involved in sub aquatic activities

0 Denotes Total Different from that which is stipulated in the questionnaire

Note: Each row in the table represents one training institution's response

Figures 1-3 illustrate the number of hours of theoretical and practical medical training for seafarers at all three training levels between different countries. The figures also show the relevant proportions of theory and practice being taught within each country.

Figure 1 overall illustrates the fact that most of the training on basic first aid is heavily weighted towards theory rather than practical training both within countries, and between countries²¹. Poland prescribes training through concentration on theoretical subjects, while Argentina and Finland place more emphasis on practical training at this level. Moreover in U.S.A. there is significant attention given to both theoretical and practical training at basic first aid level. When examining the medical training for ship's officers in Figure 2, it is evident that U.S.A. has the greatest emphasis on theoretical training followed by Germany, Poland and Japan. With respect to practical training, Germany has the highest number of hours, followed by Japan and Poland. In advanced medical training in Figure 3, U.S.A. surpasses all other countries in theoretical training but Belgium has a comprehensive practical training at this level. From Figure 3 it is also evident that the number of countries offering medical training at this level are few in relation to the other two levels.

²¹ Note that where more than one institution has completed a questionnaire from the same country such as Finland the hours have been averaged.

Figure 1^a

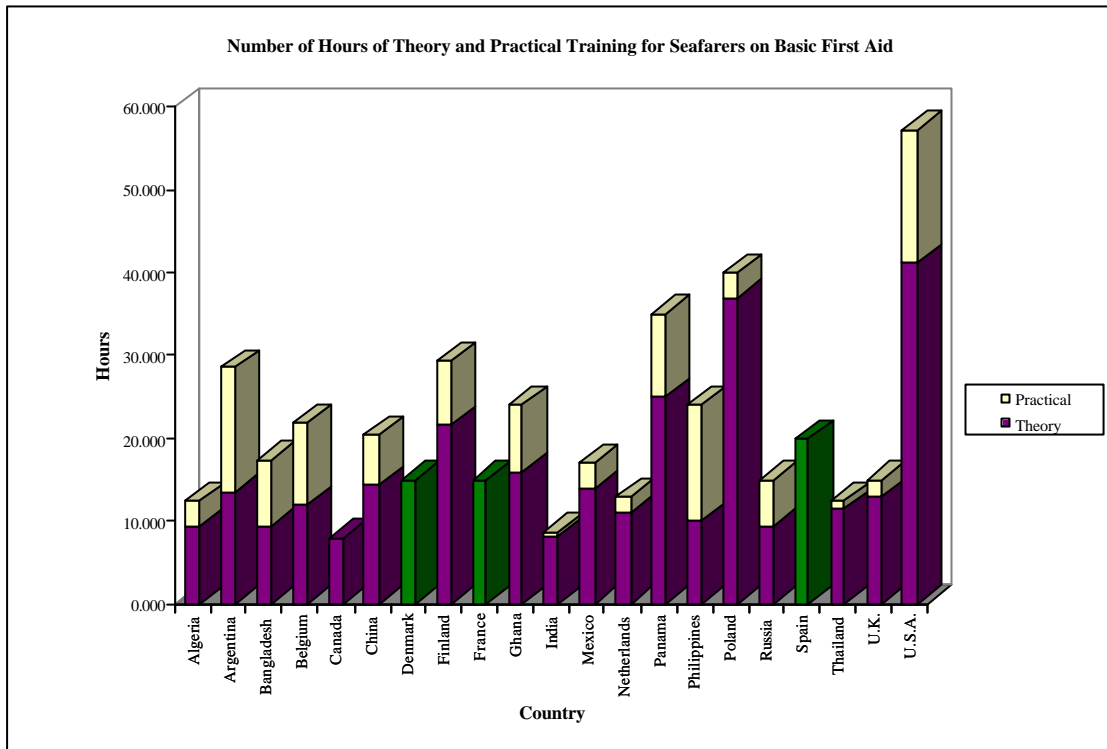


Figure 2^a

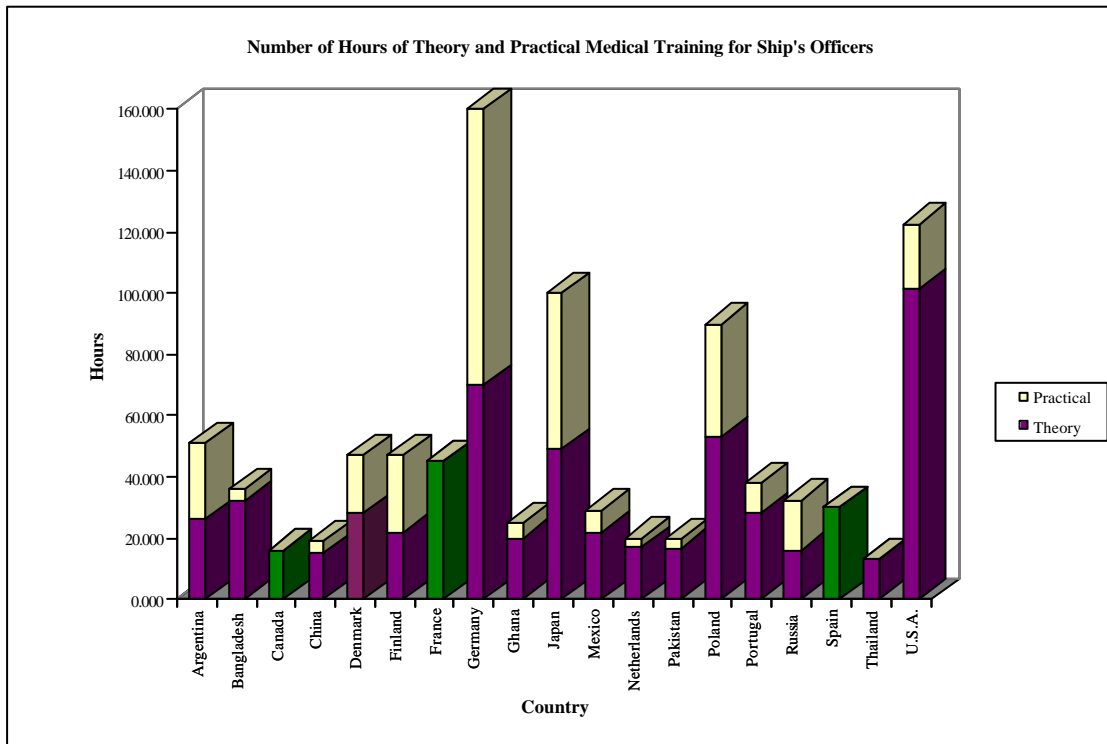
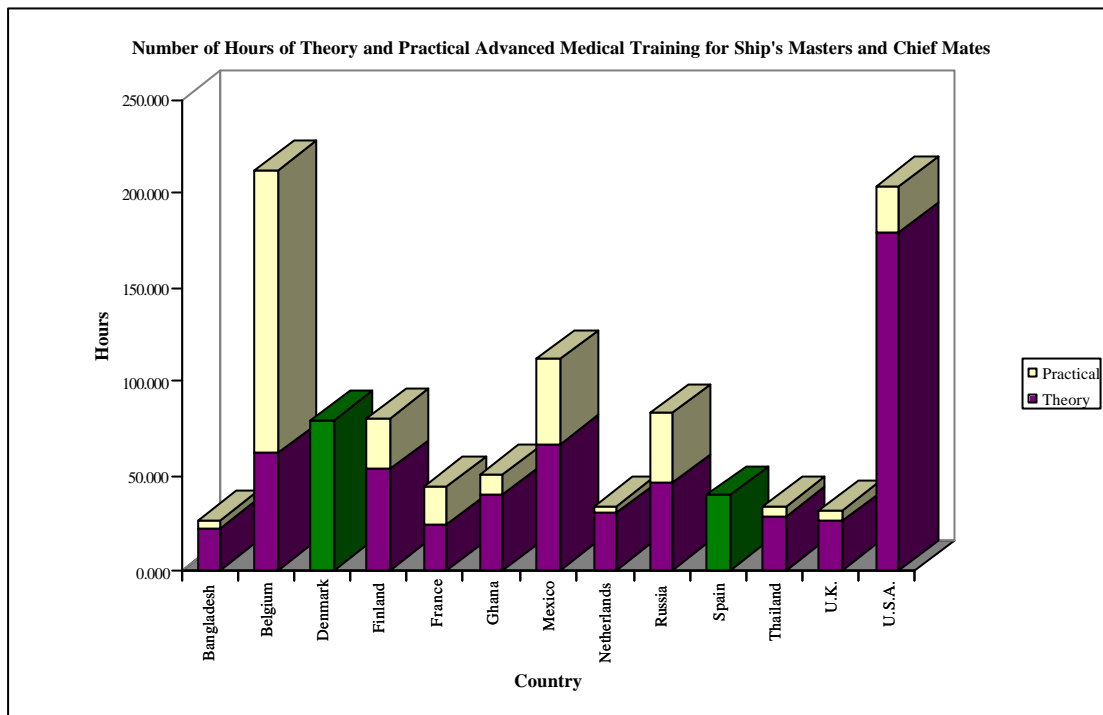


Figure 3^a

Note: a- Green coloured bars on the figures include both theory and practical hours but in the questionnaire no distinction has been made between the two.

In tables 4-6 additional information relating to the course type, material handed out, qualification of trainers and equipment obtained from the respondents is depicted.

Table 4 on basic first aid training, shows that most countries provide printed material at this level. The type of material handed out includes the International Medical Guide for Ships, a country's own medical guide and printed booklets on first aid training. Most countries also provide and demonstrate equipment such as mannequins, splints, stretchers and bandages. The lecturers at this level of medical training are mostly registered nurses or medical practitioners, although some respondents have not specified the qualification of the trainers. Overall at basic first aid level there seems to be a certain level of uniformity in the printed material handed out to seafarers, the equipment utilised during training and the level at which the trainers are qualified.

Further, countries such as Ghana, India and Mexico have stated that they follow the IMO model courses (i.e., 1.13,1.14,1.15).

Additional information regarding medical training of ship's officers (Table 5), refers to the printed material handed out, and whether the course is given as an intensive course or the lectures are divided among other lectures. At this level there is some diversity in the provision of printed material, in that some countries provide medical guides, while others either do not specify the material provided or do not provide any printed matter. There are also some countries who do not have a training course at this level. With respect to the delivery of training courses there is again some diversity, in that some training institutes do not specify how the courses are given while some countries do not offer a course at this level. The remaining countries have an equal distribution of intensive courses and medical lectures which are divided among other lectures. One or two countries namely Ghana and nautical college 1 in the USA deliver courses using both methods. In the medical training of ship's officers the additional information is fairly diverse and fragmented.

Table 6 provides the additional information for medical training of ship's masters and chief mates. From the table it is clear that a significant proportion of the respondents either do not provide medical training at this advanced level, or that the training at this level is incorporated within other levels such as ship's officers training . The countries that do provide this course tend to deliver the course intensively (USA, Belgium, Russia etc.). Printed material is in some cases not provided at all, while in others it might be from the institutions own materials, or from the Ship's Medical Guide. In general the trainers for this course are medical practitioners or qualified nurses.

Table 4 Additional Information on Basic First Aid Training for Seafarers			
Country	Printed Material	Equipment	Qualification of Lecturers
Algeria	Written material	Vacuum splints & various stretchers	N/S
Argentina	Manual on First Aid	Various mannequins, torso with electronic light controller, intramuscular injection simulator, multiple casualty simulator kit, trauma, moulage kit & anatomical charts	N/S
Bangladesh	None	Stitching instruments, different bandages, wooden splints, syringes, Ryle's tube & stomach washing tubes	Medical Practitioners
Belgium	International Medical Guide for Ships	Different mannequins, vacuum and other splints & stretchers	Medical Practitioners & Registered Nurses for First Aid
Canada	St. John Ambulance First Aid on the Scene	Resuscitation Annies, pocket masks, triangular bandages, gauze, tape, wood splints, bandages & blankets	St. John Ambulance/Red Cross Certified Instructors
China	Printed First Aid Booklet	Resuscitation mannequins, various bandages, splints, stretchers & audio visual equipment	Medical Practitioners
Denmark	N/S	N/S	N/S
Finland			
Nautical College 1	Finnish Red Cross First Aid Guide Booklet	"Anne" mannequins, vacuum splints & stretchers	N/S
Nautical College 2	Finnish Red Cross First Aid Guide Booklet	"Anne" mannequins, vacuum splints & stretchers	Teacher of General Nursing
Nautical College 3	Finnish Red Cross First Aid Guide Booklet	"Anne" mannequins, vacuum splints & stretchers	Medical Practitioners
Nautical College 4	Finnish Red Cross First Aid Guide Booklet	"Anne" mannequins, vacuum splints & stretchers	Specialists in Various fields of Medicine, Nurse and Physiotherapist
France	N/S	N/S	Emergency Services
Germany	See Compendium¹	See Compendium¹	Medical Practitioners, Female Practitioners Assistants
Ghana	None	Resuscitation mannequins, vacuum splints, wooden splints & Neil Robertson stretcher	Registered Nurses
India	First Aid Books from St. John Ambulance	Bandages, slides and splints	N/S
Japan			
Nautical College 1	See Compendium¹	See Compendium¹	N/S
Nautical College 2	See Compendium¹	See Compendium¹	N/S
Mexico	IMO Model Course 1.13	Resuscitation Doll & Tube for mouth to mouth resuscitation	N/S
Netherlands	Dutch Ship Captain's Medical Guide	Bandages, manometer, splints, mannequins & stethoscope	Medical Practitioner
Pakistan	See Compendium¹	See Compendium¹	N/S
Panama	First Aid Manual from American Red Cross & Ship Captain's Medical Guide	"Anne" mannequins, various splints, stethoscope, thermometers, manometers & self inflating bag kit	N/S
Philippines	International Medical Guide for Ships & Medical First Aid Guide for use in Accidents involving Dangerous Goods	Mannequins & various splints	N/S
Poland	Polish Ships Medical Guide & Other Material from Lectures	Anatomical models and charts, stretchers & splints	Medical Practitioners and Registered Nurses
Portugal	International Medical Guide for Ships	Resuscitation mannequins & various stretchers	N/S
Russia	International Medical Guide for Ships	Resuscitation mannequins, air splints & Neil Robertson stretcher	Medical Practitioners
Spain	See Compendium¹	See Compendium¹	N/S
Thailand	None	Resuscitation mannequins & various stretchers	N/S
U.K.	St. John & British Red Cross First Aid Manual	Resuscitation mannequins, splints, stretchers, blankets, dressings, various bandages & slings	Medical Practitioners and Registered Nurses
U.S.A.			
Nautical College 1	Brady's Emergency Care	Splints, bandages, CPR mannequins, medication administration, IV catheterisation & N-G tube placement	Medical Practitioners and Registered Nurses
Nautical College 2	Bradys Emergency Care	Various splints & bandaging	Registered Nurses and Emergency Training Board Instructors

N/S Not Specified

¹A Compendium accompanying this publication can be obtained upon request.

Table 5 Additional Information on Medical Training of Ship's Officers

Country	Printed Material	Intensive Course/Lectures in Medicine Divided Among Other Lectures
Algeria	Training currently not offered at this level	
Argentina	Manual on Medical Care	Intensive Course
Bangladesh	None	Lectures in Medicine Divided Among Other Lectures
Belgium	Masters and Officers all follow the same course. See Compendium ¹	
Canada	N/S	N/S
China	Printed Material	N/S
Denmark	In print	Intensive Course
Finland		
Nautical College 1	N/S	Lectures in Medicine Divided Among Other Lectures
Nautical College 2	Ship Captain's Medical Guide and others	Lectures in Medicine Divided Among Other Lectures
Nautical College 3	Ship Captain's Medical Guide and others	Lectures in Medicine Divided Among Other Lectures
Nautical College 4	Ship Captain's Medical Guide and others	Intensive Course
France	N/S	N/S
Germany ¹	Printed Material	N/S
Ghana	No	Both
India	No training offered at this level	
Japan		
Nautical College 1	None	Intensive Course
Nautical College 2	See Compendium ¹	
Mexico	IMO Model Course 1.14	N/S
Netherlands	Ship Captain's Medical Guide	Lectures in Medicine Divided Among Other Lectures
Pakistan	Ship's Officer Medical Emergency First Aid Course	Lectures in Medicine Divided Among Other Lectures
Panama	Training course is an integrated course for all three levels	
Philippines	Training currently not offered at this level	
Poland	Polish Ships Medical Guide	Intensive Course
Portugal	IMO/ ILO /WHO Guide and Material prepared by the teaching staff	Lectures in Medicine Divided Among Other Lectures
Russia	International Medical Guide for Ships	Intensive
Spain	N/S	N/S
Thailand	None	Intensive Course
U.K.	No training offered at this level	
U.S.A.		
Nautical College 1	Handouts and Brady Emergency Care text	Both
Nautical College 2	Handouts and Brady Emergency Care text	Intensive Course

N/S Not Specified

¹ A Compendium accompanying this publication can be obtained upon request.

Table 6 Additional Information on Medical Training of Ship's Masters and Chief Mates

Country	Intensive Course/Lectures in Medicine Divided Among Other Lectures	Printed Material	Qualified Staff
Algeria	Currently no training offered at this level		
Argentina	There is no specific training at this level it is the same as the Ship's Officer Training		
Bangladesh	Intensive Course	None	Medical Practitioners
Belgium	Intensive Course	International Ship's Medical Guide, Syllabus on Human Biology, Course on Nautical Medicine	Medical Practitioners & Registered Nurses for First Aid
Canada	No training offered at this level		
China	No training offered at this level		
Denmark	N/S	N/S	N/S
Finland			
<i>Nautical College 1</i>	N/S	N/S	N/S
<i>Nautical College 2</i>	Lectures in Medicine Divided Among Other Lectures	Various Including Ship Captains Medical Guide	Teacher of General Nursing
<i>Nautical College 3</i>	N/S	N/S	Medical Practitioner
<i>Nautical College 4</i>	Intensive Course	Various Including Ship Captains Medical Guide	Specialists in various fields of Medicine
France	N/S	N/S	Medical Practitioners or Registered Nurses
Germany	No Specific training at this level ¹		
Ghana	N/S	None	Registered Nurses
India	No training offered at this level		
Japan			
<i>Nautical College 1</i>	There is no specific training at this level it is the same as the Ship's Officer Training ¹		
<i>Nautical College 2</i>	All three levels combined ¹		
Mexico	N/S	IMO Model Course 1.15	N/S
Netherlands	Lectures in Medicine Divided Among Other Lectures	Ship Captain's Medical Guide	General Practitioner
Pakistan	No training offered at this level		
Panama	Training course as combined course for all three levels		
Philippines	No training offered at this level		
Poland	There is no specific training at this level it is the same as the Ship's Officer Training ¹		
Portugal	There is no specific training at this level it is the same as the Ship's Officer Training		
Russia	Intensive Course	Ship Captain's Medical guide	Medical Practitioners with Phd
Spain	N/S ¹	N/S ¹	Medical Practitioners and Registered Nurses
Thailand	Intensive Course	N/S	N/S
U.K.	N/S	Ship Captain's Medical Guide	Medical Practitioners and Registered Nurses
U.S.A.			
<i>Nautical College 1</i>	Intensive Course	Manual prepared by College incorporating IMO course level I,II and III	Medical Practitioners and Registered Nurses
<i>Nautical College 2</i>	Intensive Course	N/S	Registered Nurses and Emergency Training Board Instructors

¹ See compendium for further details. A compendium accompanying this publication can be obtained upon request.

5. DISCUSSION

5.1 Medical Training Levels

The results show that there are often substantial variations within each of the three levels of training and between different countries. It should also be noted that at all three levels of training, I shall as a first approximation, and in the absence of any reliable quality indicators, consider the number of training hours to be a good measurement index of the standard of training offered. That is to say, one would expect a higher number of hours devoted to training to indicate a better level of training.

Although a significant proportion of the respondents (86%) provide for basic first aid training (Table 1.1), it is clear that there are large differences in the total number of hours devoted to this course in various countries. Between the minimum and maximum hours of training across all colleges there is a difference of 65.5 hours. This suggests the possibility of serious consequences for the handling of medical emergencies. Ill or injured seafarers can not be confident that they will receive the same level of medical care as between ships of different flags.

Some 10% of respondents indicated total hours of medical training at this level, but did not specify number of hours under subject headings, theory or practice. These countries were Denmark, France and Spain. Explanations for these responses is that they could not state hours according to the questionnaire. Portugal provides for a basic first aid training course but did not have the total number of hours as details were being finalised for the course.

Seven per cent of the respondents do not provide basic first aid training courses (Pakistan and Nautical College 1 in Japan), while Germany, Nautical College 2 in Japan and Panama do not have a specific medical training course at this level: they have combined courses which integrate all three levels of training.

At the basic first aid level there are large differences in the number of hours taught (Table 1) and there is a distinct tendency toward theoretical rather than practical training but with a high degree of uniformity regarding the printed material, equipment and the level of qualification of trainers.

Turning to the next level of medical training - at the Ship's Officer level we find that 77% of the respondents provide medical training (Table 2.2). Again, there are large differences between the minimum and maximum hours of training (13-160). The differences here should be of some concern since seafarers trained at this level are responsible for the overall shipboard medical care in a number of countries.

Seven per cent of the respondents do not offer training at the Ship's Officer level (India and the UK). Yet another 7%, Algeria and Philippines currently do not offer courses at this level, but intend to prepare courses in accordance with IMO course models in view of the STCW 95.

Two countries (Nautical College 2 in Japan and Panama) have a course which combines all three levels but, training in Japan is more comprehensive than Panama. Belgium has a combination of the ship's officer and master's courses and Nautical College 1 in Finland, Poland and Germany specify theory and practical hours but not hours under specific subjects. France and Spain only specify total hours of training as their courses differ from the format of the questionnaire. Overall, at the ship's officer level of training patterns are similar to those found at the basic first level, although there is slightly more emphasis on practical training (Figure 2). The number of training hours are higher than at basic first aid level which is to be expected, as it is a higher level of training with more responsibility attached.

Medical training for the ship's master and chief mates is the most advanced training available to seafarers for shipboard medical care (Table 3.3) but only 53% provide this level of training. The difference in the number of hours of training given at this level varies from 26.25 to 289 hours, giving a divergence of approximately 263 hours between the minimum

and maximum hours of training. This discrepancy is alarming. Seventeen per cent of the respondents do not provide advanced medical training and among them many are in countries which also supply a majority of the world's seafarers (Philippines, India, China and Pakistan). Since only one college from each of the above countries responded, it is difficult to say whether advanced medical training is provided in other colleges within these countries. Canada is the other country which does not provide advanced level of training, but Algeria intends to offer an advanced training course for Ship's Masters in the future.

Thirteen per cent of the respondents indicated that they do not provide a specific course at this level, but that it is the same as the Ship's Officer, thus implying that the highest level of medical training in those countries is at Ship's Officer level. Moreover, another 7% have the training course combined at all three levels (Nautical College 2 in Japan and Panama). Nautical College 1 in Japan gives "on the job" advanced medical training.

Thirteen per cent of the respondents only indicate total number of hours for advanced medical training, while France provides a breakdown of hours between theory and practical.

In summary, on analysing the responses from the questionnaires for the three levels of medical training, at the lower training levels (i.e., for all seafarers) most colleges and countries are providing such a course with considerable uniformity whereas at the higher or advanced levels of training there are fewer countries providing such courses and with considerable variability in the standard and content of the training given.²² It should also be stressed that for some larger seafaring countries only one training institution replied to the questionnaire and for those countries the responses may not be fully representative of the actual training situation and standards.

The data reveals some substantial variations in the medical training provided for seafarers and it is clear that some maritime administrations treat the question with more seriousness

²² It should also be noted that where respondents have not been able to specify either, subjects or the number of hours allocated to subjects this was a limitation of the questionnaire. The reason for this is that the questionnaire was primarily based on the subjects taught under the IMO Course Models.

than others. The next step in the analysis here is to try to identify which of the training programmes could easily be regarded as providing best practice. This is of course, not an easy question, but it is nonetheless extremely important. The approach taken here has been to assume that the training provided for the personnel of the UK Ambulance Service provides a good model. Accordingly there now follows an account of the Ambulance Service training requirements and an indication of which current seafarer programmes come closest to them .

5.2 Medical Training in the UK Ambulance Services

In the UK there are two levels of training for the ambulance services, a basic training course and the Paramedic training course. The levels of training are uniform across the country. The basic training course is a pre-requisite for the Paramedic training. All applicants must pass an entry examination which includes both written and practical elements set by the NHS Training Division (NHSTD). The applicant must also undergo an interview to assess their suitability for training. Successful trainees then have to have 12 months' minimum post qualification experience in accident and emergency work immediately prior to application for paramedic training. During this time trainee technicians are regularly assessed (through the submission of 27 essays) and if successful then qualify as Ambulance Technicians at the end of the post qualification period. The basic course is completed over eight weeks and on a residential basis (see Appendix 6 for details of the subjects taught).

The paramedic training course follows a syllabus set by the NHSTD. It was developed in conjunction with the Joint Royal Colleges and Ambulance Services Liaison Committee (JCALC). The total training time is 120 weeks but, it is now possible to follow an accelerated qualification path which takes 68 weeks if approved work based assessment arrangements are in place. The training is divided in three stages which together require a minimum of 320 hours. The first stage (40 hours minimum) is devoted to theory (anatomy, physiology and patient management), the second stage (120 hours minimum) to theory and practice (ambulance paramedic skills; and the third stage (160 hours minimum) to

supervised clinical placement in a local hospital (see Appendix 7 for further details of the course content). Trainees are required to pass an examination at the end of stages one and two before progressing to the next stage. Their competence at stage three is determined by continuous assessment. Post qualification paramedics are required to undergo local assessment of skills at least one day a year, with remedial training where necessary, and to attend a five day re-assessment course once every three years (Training of Ambulance Paramedics 1995-1996).

5.3 Medical Training of Seafarers in Comparison with Medical Training in the UK Ambulance Services

In comparing medical training in the UK ambulance services with medical training for seafarers, it should be stressed that the primary duty of ambulance service personnel is to deal with medical emergency situations, while for seafarers this is an ancillary duty. Therefore, it is expected that the training for ambulance services will be more detailed and rigorous. Nonetheless, provided this is taken into consideration, valid comparisons can still be made between the training levels in the two occupations, in particular to assess and establish the level at which medical care is given at sea through a contrast with land-based care. Land-based occupations usually receive emergency medical care from the ambulance services, whereas, the same initial emergency care at sea must be provided by some member(s) of the ships' crew who have been appropriately trained.

The training programmes in the ambulance services are developed by a committee which has representation from medical colleges, ambulance services and personnel from accident, emergency and trauma departments. Medical training programmes for seafarers are either loosely based around joint IMO/ILO/WHO (World Health Organisation) guidelines or developed by trainers within individual countries. Two problems arise for seafarer medical training. Some countries adopt these limited guidelines as a minimal basis for their medical training (e.g., Philippines, China, India etc.) , while others have preferred to develop their own idiosyncratic medical training programmes. This is a primary reason for the variation in

the levels of training that has been observed. Although such variations among states also exist in levels of ambulance paramedic training, this does not per se pose such a problem for the paramedics. Paramedics provide services typically only within and to nationals of the state in which they trained. In the case of the shipboard personnel, their services are offered on an international basis, both in terms of crews attended and location. For this reason the attainment of a detailed uniform international training programme modelled on an appropriate ambulance paramedic training programme seems an urgent priority.

From the survey results and through examination of the ambulance services training courses, structural differences in the courses are immediately evident. It is expected that the training for ambulance services should be very comprehensive, intensive and demanding since they are receiving training for their main duties (see Appendix 6 & 7). By comparison, seafarers' training programmes are usually interspersed with other training and are very fragmented. Yet, both seafarers responsible for medical care, and the ambulance services are required to provide medical care and attention in emergency situations and manage the patient until they reach professional medical treatment. For patients at sea, this may be as long as a few days. This suggests that, despite the asymmetry of occupation, the shipboard medical attendants require a much closer correspondence with ambulance paramedic training standards.

Course length is a significant factor in determining the quality and standard of the training given. For example, the course lengths in the ambulance services are 8 weeks and 120 weeks (68 weeks accelerated course) respectively for the basic and paramedic training, but there are notable variations in the course lengths for seafarers medical training with only Germany having a dedicated 4 week course. Other countries have shorter courses which may be intensive (see Tables 5 & 6).

Training programmes in the ambulance services include extensive practical as well as theoretical training (Appendix 6 & 7). By contrast medical training for seafarers in most of the countries and colleges largely concentrates on theory rather than practice. For example, the USA at all three levels of training has largely theoretical training (see Figures 1-3), while

only Belgium at the advanced level and Germany at the ship's officer level have proportionately greater emphasis on practical training. Although theoretical training is important, the practical training is at least of equal importance in re-enforcing theory, learning diagnostic and therapeutic procedures and practising these procedures (Kirk & Duus 1996).

The significance of comparison of subjects taught for medical training between the two occupations is limited as land based emergencies are sometimes different to shipboard emergencies and vice versa. Taking into account this constraint an attempt has been made to compare subjects under broad groupings. A comparison has been made between the subjects taught at the paramedic level of training and the subjects taught under ship's officer and ship's masters/chief mates training level²³ (see Figures 4 & 5).

²³ Note that a comparison could not be made with basic training in the ambulance services and basic first aid training for all seafarers. The reason for this is that the basic training in the ambulance services is given in weeks and not broken down into hours.

Figure 4

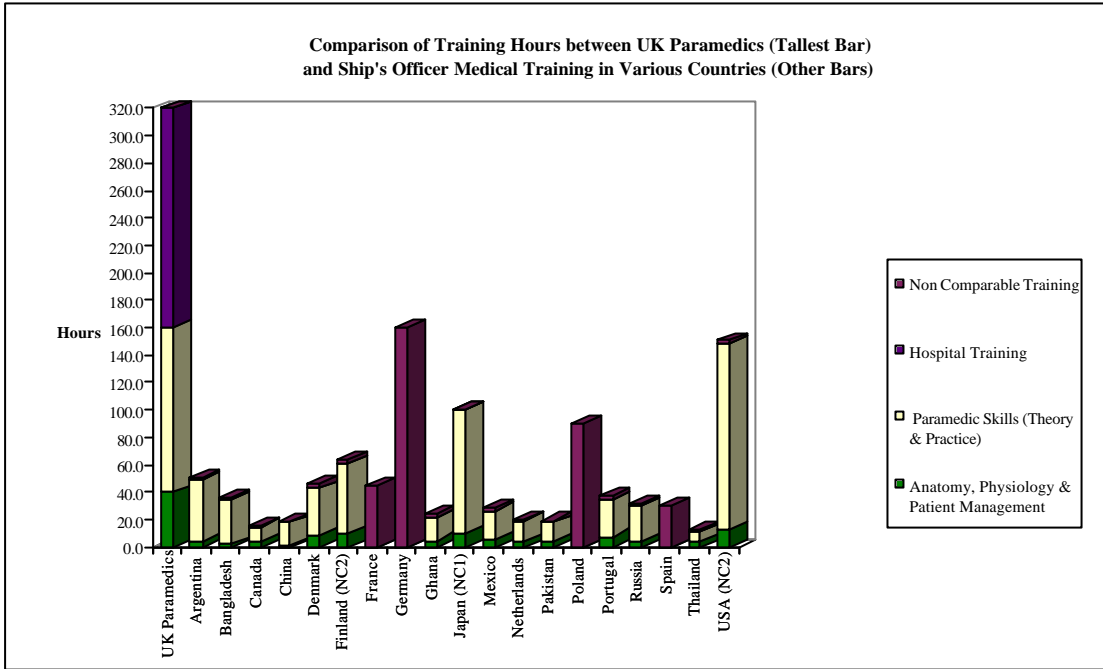
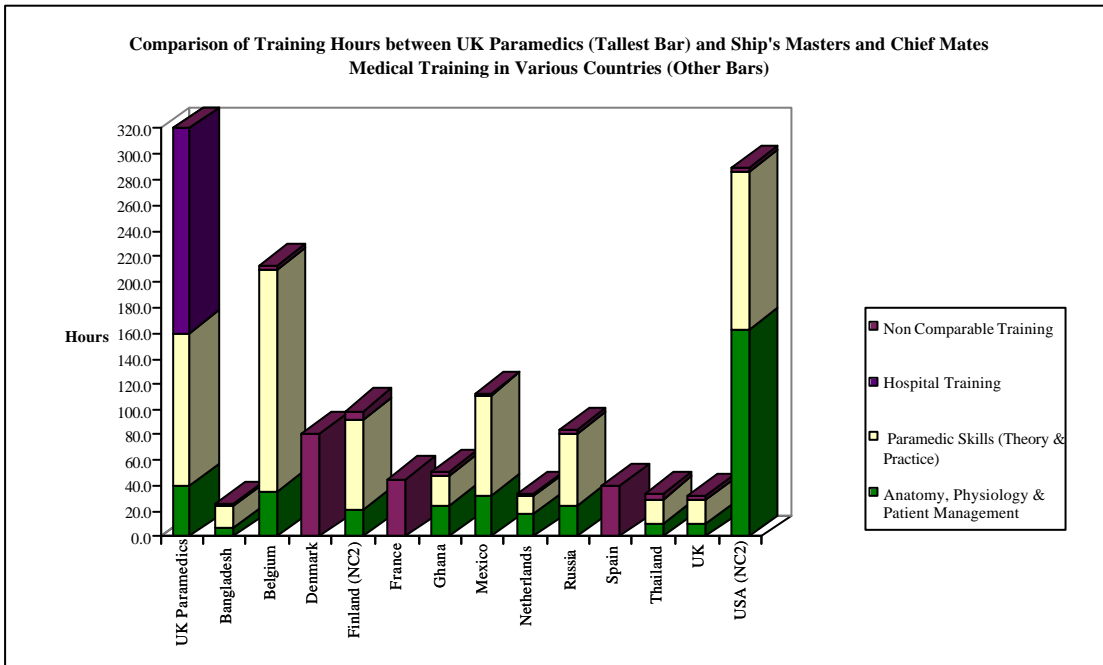


Figure 5



In figure 4 it is evident that the hours of paramedic training are significantly higher than the Ship's Officer Medical training. Moreover hospital training is only offered in paramedic training and not at the Ship's Officer level. In figure 5 a similar pattern emerges at the Ship's Masters and Chief Mates training level. The notable difference to figure 4 is that with respect to the number of hours of training, both Belgium and the USA have a high number of training hours which are more comparable with the paramedics. However, in the USA there is considerable emphasis on anatomy, physiology and patient management.

Refresher training is of course extremely important for both the ambulance services and seafarer medical training to refresh upon existing and update on new knowledge and skills. In the ambulance services the re-assessment of existing knowledge and skills is not a problem as ambulance technicians and paramedics are continually using the knowledge and skills which they have acquired on a daily basis. On the other hand, seafarers are only required to use their medical knowledge and skills when required in emergency situations on board ship which are sporadic and thus knowledge and skills may not be used for many months after training.

Ambulance services to date, however have had more frequent refresher training and assessment than seafarers. For ambulance technicians there is continual reassessment with a work based assessor and over a period of 3 years both practical skills and theory are tested and signed in a workbook. After 3 years assessment re-commences. Paramedics have re-assessment course every 3 years which includes 2 days at a training centre and 3 days in hospital. Moreover, every year a paramedic must receive one days formal and documented local assessment of skills. Seafarers in most countries do not have refresher training. Only recently, with the advent of the European Council directive 92/29/EEC, it is mandatory for seafarers responsible for medical care in member states to have refresher training every five years. The international bodies IMO/ILO have provisions regarding refresher training however this is not mandatory. Countries such as Denmark and Finland have incorporated refresher training in light of the European directive and modified it to give more

comprehensive refresher training to those responsible for medical care on board ship (Kirk & Duus 1996 and Saarni et al 1997).

In summary, taking into consideration and allowing for the fundamental difference in the two occupations, it would still be reasonable and fair to conclude, that the levels of medical training for the ambulance services are more structured and of a higher standard than the medical training given to seafarers which is fragmented and variable between and within countries.

6. CONCLUSION

6.1 Summary & Recommendations

It may be concluded that seafarers are not offered the same level of medical care that land-based occupations receive but, are provided with variable medical care. The countries with high standards of seafarer medical training are Germany, Denmark, Japan and Belgium.

The results and examination of the medical training levels indicate that a new approach to defining seafarer medical training is necessary. Therefore, in conclusion this study offers possible approaches to redefining seafarer medical training which might be combined to assist in designing an optimal training scheme.

One possible approach which suggests itself in the context of this study is to take UK ambulance services training as a model, and adapt it suitably for seafarer training.

From the findings therefore the following list of tentative recommendations on training levels may be suggested:

- There is a need for global uniformity in training levels .
- Before designing a syllabus there is need to identify the standard of training that is relevant in the first instance before formulating a training programme (e.g., UK paramedic level or other comparable equivalents). These can then provide the basis for an appropriate syllabus.
- Training needs to be augmented with equipment.
- The degree to which and ways in which telemedical services can assist seafarers in providing and enhancing medical care on board ship needs to be examined.

- As an accompaniment similar appropriate training needs to be designed for land-based radiomedical advisers.
- Comprehensive practical training is as important as theoretical training.
- Optimally at any given time, every vessel should have two seafarers with advanced training together with all other members of crew having basic medical training.
- It may be necessary to devise special training elements for specific vessel types such as tankers.
- Health awareness and preventive measures need to be incorporated into all training schemes.
- Finally a cost benefit analysis of the likely effects and costs of providing various levels of training could usefully be made and could assist in syllabus definition.

An optimal training scheme could be constructed taking these recommendations into consideration. However to propose an optimal training scheme is outside the scope of this paper as further detailed investigations are required. Nonetheless, a sketch of one possible training scheme is outlined below for purposes of suggestive illustration.

6.2 Draft outline of a possible Training Scheme

Training levels

- Basic training for all seafarers
- Intermediate level of training for specified crew members
- Advanced training for medical attendants responsible for health care aboard

Broad areas of training

-Occupational Health

-Preventive Health

-Curative Health

Period of Training

-To be increased at all levels

Basic training for all seafarers

- ***Basic preventive measures***

(Although this area is not related to initial curative care to be given at the time of an incident, in an ideal programme at this stage it is considered best to impart the basic knowledge on preventive health).

-Prevention against infectious diseases, while on board, at ports of call and during leave periods

-Chemical prophylaxis against malaria

-Basic knowledge on life style illness (alcohol, cigarettes, diet and sex)

- ***First aid***

-Care of the unconscious

-Shock, and care of the shocked patient

-Care of the suspected fractured patient

-Compound fractures

-Simple fractures

-Care of poisoned patient

-Care of the burnt patient

-Care of the bleeding patient

-Care of suspected heart patient

-Care of electrocuted patient

-Handling of a cardiac arrest patient

-Handling of respiratory arrest patient

-Care of the drowned patient

-Rescue of a causality

-Risk assessment to self

-Entering confined places

-Danger from sea

- Danger from fire
- Danger from electricity
- Assessment of the danger situation

Intermediate level of training for specified crew members

To be qualified for training at this level, the specified crew member should have undergone basic training.

- Knowledge of all topics specified under basic training
- Practical knowledge of using first aid equipment, materials used for first aid etc.
- Basic knowledge of anatomy and physiology, especially with regards to providing emergency care i.e. palpable arterial pulses, eye signs, signs of haemorrhage etc.
- Basic toxicology in relation to materials carried on board special vessels, found on normal cargo vessels and cruise ships:
 - Identifying the poisoned patient (clinical signs and symptoms)
 - Basic knowledge on specific acute poisoning
 - Care of the poisoned patient
 - Care of the chemically burnt patient
 - Safety of self
- Care of fractures including spinal injuries
- Care of head injury patient
- Care of the burnt patient
- Care of the electrocuted patient
- Care of the drowned
- Care of the Cardiac arrest patient
- Care of the patient suffering from exposure to extremes of temperature
- Rescue of the casualty
- Care of the rescued
- Care of the alcohol intoxicated person
- Radio / Telemedicine advice

Basic knowledge on common medicine used on board

- Knowledge on sterility of medical equipment
- Knowledge on infectious diseases and care of patient on board

Advanced training for medical attendants responsible for health care aboard

Curative care

-Theoretical

-Practical training (more time to be allocated for practical training **in hospitals**)

-Clinical

-Medical examination and diagnosis

-Treatment including advanced training on specified surgical procedures*

* Essential with the introduction of Telemedicine to ships

-Laboratory

-basic knowledge on investigations (e.g. urine testing for sugar, blood, protein etc., blood film testing for malaria, use of microscope etc.)

-advanced knowledge on investigations (knowledge on the use of advanced equipment e.g. x-ray machines, electrocardiogram)*

* Essential with the introduction of telemedicine to ships

Preventive health

Prevention of infectious diseases

-Types of common infections

-Immunisations

-Chemoprophylaxis against malaria

-Use of protective gear when treating patients

-Treatment of suspected HIV and HBV patients (Universal precautions)

-Disposal of clinical waste

Occupational health

-Theory

Basic occupational health (toxicology, injuries, collection of data, ergonomics, engine room work etc.)

-Practical training

Basic knowledge on environmental exposure measurement, noise levels etc.

-Prevention

Prevention of accidents and occupational illness

-Regulatory issues

In all, preventive, occupational and curative health, international regulations on health, immunisation requirements etc.

-Telemedical care

Use of diagnostic equipment, surgical equipment, computer literacy etc.

-Evacuation of an ill patient

-Death of a patient

-Action at death

APPENDICES

APPENDIX 1 STCW 95 Table A-VI/4-1

Table A-VI/4-1: Specification of Minimum Standard of Proficiency in Medical First Aid

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, Understanding and Proficiency	Methods for Demonstrating Competence	Criteria for Evaluating Competence
Apply immediate first aid in the event of an accident/ illness on board	First-aid kit Body structure and function Toxicological hazards on board, including use of the <i>Medical First Aid Guide for use in Accidents Involving Dangerous Goods (MFAG)</i> or its national equivalent Examination of casualty or patient Spinal Injuries Burns, scalds and effects of heat and cold Fractures, dislocations and muscular injuries Medical care of rescued persons Radio medical advice Pharmacology Sterilisation Cardiac arrest, drowning and asphyxia	Assessment of evidence obtained from practical instruction	The identification of probable cause, nature and extent of injuries is prompt, complete and conforms to current first-aid practice Risk of harm to self and others is minimised at all times Treatment of injuries and the patient's condition is appropriate, conforms to recognised first-aid practice and international guidelines

APPENDIX 2 STCW 95 Table A-VI/4-2

Table A-VI/4-2: Specification of Minimum Standard of Proficiency for Persons in Charge of Medical Care on Board Ship

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, Understanding and Proficiency	Methods for Demonstrating Competence	Criteria for Evaluating Competence
Provide medical care to the sick and injured while they remain on board	<p>Care of casualty involving:</p> <ol style="list-style-type: none"> 1. head and spinal injuries 2. injuries of ear, nose, throat and eyes 3. external and internal bleeding 4. burns, scalds and frostbite 5. fractures, dislocations and muscular injuries 6. wounds, wound healing and infection 7. pain relief 8. techniques of sewing and clamping 9. management of acute abdominal conditions 10. minor surgical treatment 11. dressing and bandaging <p>Aspects of Nursing:</p> <ol style="list-style-type: none"> 1. general principles 2. nursing care 	<p>Assessment of evidence obtained from practical instruction and demonstration</p> <p>Where practicable, approved practical experience at a hospital or similar establishment</p>	<p>Identification of symptoms is based on the concepts of clinical examination and medical history</p> <p>Protection against infection and spread of diseases is complete and effective</p> <p>Personal attitude is calm, confident and reassuring</p> <p>Treatment of injury or condition is appropriate and conforms to accepted medical practice and relevant national and international guides</p> <p>The dosage and application of drugs and medication complies with manufacturer's recommendations and accepted medical practice</p> <p>The significance of changes in patient's condition is promptly recognised</p>

APPENDIX 2 STCW 95 Table A-VI/4-2 continued

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, Understanding and Proficiency	Methods for Demonstrating Competence	Criteria for Evaluating Competence
Provide medical care to the sick and injured while they remain on board <i>(continued)</i>	<p>Diseases, including:</p> <ol style="list-style-type: none"> 1. medical conditions and emergencies 2. sexually transmitted diseases 3. tropical and infectious diseases <p>Alcohol and drug abuse</p> <p>Dental Care</p> <p>Gynaecology, pregnancy and childbirth</p> <p>Medical care of rescued persons</p> <p>Death at sea</p> <p>Hygiene</p> <p>Disease prevention, including:</p> <ol style="list-style-type: none"> 1. disinfection, disinfestation, de-ratting 2. vaccinations <p>Keeping records and copies of applicable regulations:</p> <ol style="list-style-type: none"> 1. keeping medical records 2. international and national maritime medical regulations 		

APPENDIX 2 STCW 95 Table A-VI/4-2 continued

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, Understanding and Proficiency	Methods for Demonstrating Competence	Criteria for Evaluating Competence
Participate in co-ordinated schemes for medical assistance to ships	External assistance including: <ol style="list-style-type: none"> 1. radio medical advice 2. transportation of the ill and injured, including helicopter evacuation 3. medical care of sick seafarers involving co-operation with port health authorities or out patient wards in port 		<p>Clinical examination procedures are complete and comply with instructions received</p> <p>The method and preparation for evacuation is in accordance with recognised procedures and is designed to maximise the welfare of the patient</p> <p>Procedures for seeking radio medical advice conform to established practice and recommendations</p>

APPENDIX 3 STCW 95 Table A-VI/1-3

Table A VI/1-3: Specification of minimum standard of competence in elementary first aid

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, Understanding and Proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Take immediate action upon encountering an accident or other medical emergency	<p>Assessment of needs of casualties and threats to own safety</p> <p>Appreciation of body structure and functions</p> <p>Understanding of immediate measures to be taken in cases of emergency, including the ability to:</p> <p>.1 position casualty .2 apply resuscitation techniques .3 control bleeding .4 apply appropriate measures of basic shock management .5 apply appropriate measures in event of burns and scalds, including accidents caused by electric current .6 rescue and transport a casualty .7 improvise bandages and use materials in emergency kit</p>	Assessment of evidence obtained from approved instruction or during attendance at an approved course	<p>The manner and timing of raising the alarm is appropriate to the circumstances of the accident or medical emergency</p> <p>The identification of probable cause, nature and extent of injuries is prompt and complete and the priority and sequence of actions is proportional to any potential threat to life</p> <p>Risk of further harm to self and casualty is minimised at all times</p>

APPENDIX 4 Annex II Section III Council Directive 92/29/EEC of 31 March 1992

III. ANTIDOTES

1. Medicines

- General
- Cardio-vascular
- Gastro-intestinal system
- Nervous system
- Respiratory system
- Anti-infective
- For external use

2. Medical Equipment

- Necessary for the administration of oxygen (including maintenance requisites)

Note

For the detailed implementation of Section III, Member States may refer to the IMO Medical First Aid Guide for use in accidents involving dangerous goods (MFAG) contained in the 1990 consolidated edition of the IMO International Maritime Dangerous Goods Code.

Any adaptation of Section III in implementation of Article 8 may take account, inter alia, of any updating of the MFAG.

APPENDIX 5 Medical Training Questionnaire for Nautical Schools and Colleges regarding Medical Training of Seafarers

BASIC FIRST AID TRAINING FOR SEAFARERS

Does the medical first aid training given in your training institute include the following (please put the number of training hours and x into the box, if the training includes the topic)?

General principles (number of hours altogether: _____)

- evaluation of accident situation
- assessing own risk
- helping situation
- estimating the need for urgent treatment

Human anatomy and bodily functions (number of hours altogether: _____)

- bones
- joints, muscles and tendons
- circulation
- breathing apparatus
- central nervous system
- digestive system

Positioning of an injured person (number of hours altogether: _____)

- unconscious patient, examination of the level of consciousness
- opening air-ways
- positioning of unconscious patient
- use of airway tube (or pharyngeal) tube
- positioning of patient when giving resuscitation
- positioning of patient during transportation

Management of the shock (number of hours altogether: _____)

- causes of shock
- identification of the symptoms of shock
- principles of shock treatment
- prevention of shock

Resuscitation (number of hours altogether: _____)

- identification of heart stop
- identification of breathing stop
- identification of need for resuscitation
- resuscitation alone
- resuscitation together with another person

Bleeding (number of hours altogether: _____)

- risk connected with bleeding
- internal bleeding
- stop bleeding with a compression
- use and contraindications of strain bandage

Burning and freezing, hypothermia (number of hours altogether: _____)

- first aid treatment of burns
- helping order and first aid treatment for electrical accidents
- first aid for frostbite
- identification of hypothermia and its first aid
- chemical injuries on skin
- chemical injuries in eyes
- protection of the helper

Evacuation and transportation of a patient (number of hours altogether: _____)

- estimation of the urgency
- identification of risk of transportation to an injured person
- transportation with various types of stretchers
- transportation of a patient without any aids

Practical exercises (number of hours altogether: _____)

- various bandages and ways to bind
- various splints and splinting (air splints, vacuum splints)
- working in enclosed spaces (dangerous gases, lack of oxygen)
- own protection against infectious agents

The total amount of the above training is (no of hours: _____) and they are divided as follows:

number of lectures: _____
 number of group-work hours: _____
 number of hours for practical exercises: _____

Do the students get any printed material on first aid? If so, what kind of material? If the material has been prepared by your training institute, please add copies of it to this questionnaire.

What kind of equipment is used during practical exercises (resuscitation mannequins, vacuum splints, various stretchers etc.)

Does the training include practical exercises/follow-up of the activities (number of hours altogether: _____)

- in health care service units
- in hospital first aid clinics
- in ambulance
- in other place, where _____

MEDICAL TRAINING OF SHIP'S OFFICERS

Does the training in first aid and advanced medical care of ship's officers in your institute include the following (please put the number of training hours and x into the box, if the training includes the topic)

Emergency first aid training (number of hours altogether: _____)

- emergency first aid skill training/refreshers of training

Ship's medicine chest (number of hours altogether: _____)

- medicines, medical drugs and their use
- principles for administering medicines, side effects
- knowledge of various preparations in ship's medicine chest and their use
- use of instruments in ship's medicine chest

Human anatomy and bodily functions (number of hours altogether: _____)

- bones
- muscles and joints
- circulation
- breathing
- digestive system
- central nervous system
- uro-genitary system

Examination of patient (number of hours altogether: _____)

- taking anamnesis
- asking about symptoms
- medical examination
- keeping a medical diary

Poisoning on board ship (number of hours altogether: _____)

- ☒ transportation of dangerous cargoes
- ☒ taking care of accidents caused by dangerous cargoes, using MFAG
- ☒ identification of symptoms and signs of poisoning
- ☒ emergency treatment of poisonings (skin, lungs, gastric channel)

Burning and freezing traumas, electrical accidents (number of hours altogether: _____)

- ☒ causes of burns
- ☒ emergency and further treatment of burns
- ☒ freezing traumas, causes and identification
- ☒ emergency and further treatment of freezing traumas
- ☒ causes hypothermia, signs of hypothermia
- ☒ emergency treatment of hypothermia patient, treatment of hypothermia
- ☒ electrical accidents, causes and identification of electrical traumas
- ☒ emergency and further treatment of electrical traumas

Fractures, luxations, muscle traumas (number of hours altogether: _____)

- ☒ the accident situation, identification of risks
- ☒ different types of fractures (open, closed, hair-fractures)
- ☒ first aid of fractures
- ☒ immobilisation of fracture, various splints and bindings
- ☒ positioning of patient with fracture, transportation of patient
- ☒ arranging of transportation for patient with fracture
- ☒ most common luxations
- ☒ identification of luxations and emergency treatment
- ☒ causes of muscle injuries and their identification
- ☒ first aid of muscle injuries

Trauma of the spine (number of hours altogether: _____)

- causes of injury to the spine
- suggestion and recognition of spinal injury
- how to handle a patient with a spinal trauma

Medical consultation (number of hours altogether: _____)

- Consultation places
- what to do before consultation, examination of a patient
- Radio Medical Advice
- different ways of making radio or telemetric contact in practical situations

Do the students get any printed material? If so, what kind of material? If the material has been prepared by your institute, please add copies of it to this questionnaire.

What kind of practical exercises are included in the training programme? Give the topic of each exercise and its duration:

exercise	length of the exercise
_____	_____
_____	_____
_____	_____
_____	_____

Is the training for officers given as an intensive medical course or do the lectures last over a longer period between other lessons at your training institute?

- course given as intensive course
- lectures in medicine are divided among other lectures

Does the training for officers include practical exercises/follow up of the activities (number of hours altogether: _____)

- in health care service units
- in hospital first aid clinics
- in ambulance
- in other place, where: _____

MEDICAL TRAINING FOR SHIP MASTERS AND/OR CHIEF MATES

Does the training in first aid and advanced medical care given in your institute include the following (please put the number of training hours and x into the box, if the training includes the topic)

Repetition of first aid knowledge and skills (number of hours altogether: _____)

- revision of emergency treatment knowledge and skills
- revision of first aid knowledge and skills included in officer training

Treatment of injured and/or multi-injured patient (number of hours altogether: _____)

- identification of symptoms
- handling of unconscious patient
- skull and nervous injuries
- taking care of a patient with spinal injury

Ear, nose and throat and eye injuries (number of hours altogether: _____)

- symptoms and their identification
- treatment principles of above mentioned injuries

Internal and external bleeding (number of hours altogether: _____)

- identification of symptoms
- risk and dangers connected with bleeding
- treatment principles of bleeding

Burning and freezing injuries, hypothermia (number of hours altogether: _____)

- identification of symptoms
- evaluation of the degree/severity of the injury
- treatment of injuries of various levels of severity
- complications of injuries

Fractures, luxations, muscular injuries (number of hours altogether:_____)

- ⊕ identification of traumas
- ⊕ emergency and further treatment in different situations
- ⊕ fractures of skull, pelvis and spine, identification and treatment
- ⊕ transportation of an injured person

Wounds (number of hours altogether:_____)

- ⊕ recognition of different wound types
- ⊕ choosing the right way of treatment according to the severity and type of the wound
- ⊕ cleaning wounds
- ⊕ stopping bleeding
- ⊕ binding of wounds, compression
- ⊕ strain bandage and its risks
- ⊕ anaesthetising the wound and suturing
- ⊕ taking off sutures
- ⊕ identification and treatment of infectious wounds

Pain relief (number of hours altogether:_____)

- ⊕ general principles for pain relief
- ⊕ different ways to relieve the pain (medical, non-medical ways)

Acute abdominal pain (number of hours altogether:_____)

- ⊕ identification of symptoms
- ⊕ recognising the disease behind the symptoms
- ⊕ peritonitis
- ⊕ occlusion of the intestine
- ⊕ urinary retention
- ⊕ abdominal trauma

Recognition and treatment of various diseases (number of hours altogether:_____)

- ☒ psychological diseases (number of hours altogether:_____)
- ☒ diseases of central nervous system (number of hours altogether:_____)
- ☒ gastrointestinal diseases (number of hours altogether:_____)
- ☒ coronary-vascular diseases (number of hours altogether:_____)
- ☒ pulmonary diseases (number of hours altogether:_____)
- ☒ urinary and genital diseases (number of hours altogether:_____)
- ☒ eye diseases (number of hours altogether:_____)
- ☒ skin diseases (number of hours altogether:_____)
- ☒ ear, nose and throat diseases (number of hours altogether:_____)
- ☒ dental diseases (number of hours altogether:_____)
- ☒ musculo-skeletal diseases (number of hours altogether:_____)
- ☒ infectious diseases (number of hours altogether:_____)
- ☒ misuse of alcohol and drugs (number of hours altogether:_____)
- ☒ gynaecological diseases, gravity (number of hours altogether:_____)

General principles for medical treatment (number of hours altogether:_____)

- ☒ observation of patient
- ☒ keeping a medical diary
- ☒ assessing the need of further treatment
- ☒ recording medical points and filing
- ☒ regulations for privacy of medical data
- ☒ diary for medicines
- ☒ “Material Safety Data Sheet”

Radio Medical-consultations (number of hours altogether: _____)

- general principles
- places for making contact
- asking for medical advice
- registering of information

Evacuation of a patient (number of hours altogether: _____)

- treatment during evacuation
- protection of a patient during evacuation
- various ways to evacuate
- information about previous treatment to be given with the evacuated patient

Transportation of a sick or injured person (number of hours altogether: _____)

- identification of problems connected with transportation
- identification of various ways of transportation and comparing them
- evacuation by helicopter

Death at sea (number of hours altogether: _____)

- signs of death
- examination of the deceased
- identification of death
- storing the corpse on board ship
- funerals at sea
- collecting information and storing the documents

Laboratory tests (number of hours altogether: _____)

- urine glucose and albumin
- blood sugar
- measuring urine amounts
- doing blood smears

Training in hygiene (number of hours altogether: _____)

- personal hygiene
- drinking water
- wastes, waste water
- air conditioning, ventilation
- food hygiene

Prevention of diseases (number of hours altogether: _____)

- disinfection, deratting
- where to get help
- vaccinations

Ship's medicine chest (number of hours altogether: _____)

- administering medicines, principles and side effects
- knowledge of various medicines and their indications
- Radio Medical consultations
- storing of medicines
- supplementing ship's medicine chest
- instruments and their use
- sterilisation of instruments, storing instruments

Do the students get any printed material? If so, what kind of material? If the material has been prepared by your training institute, please add copies of it to this questionnaire.

What kind of practical exercises are included in the training programme? Give the topic of each exercise and its duration?

exercise	length of the exercise
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Is the training for officers given as an intensive medical course or do the lectures last a longer period between other lessons on your training institute?

- as an intensive course
- lectures in medicine are divided among other lectures

Does the training for officers include practical exercises/follow-up of the activities (number of hours altogether: _____)

- in health care service units
- in hospital first aid clinics
- in ambulance
- in other place, where _____

Who is giving medical training for officers and masters in your training institute and what topics are they teaching? Are they registered medical practitioners, registered nurses, health care workers or other qualified teachers ?

Thank you for filling in this questionnaire!

APPENDIX 6 Ambulance Technician Training

Ambulance Technician Training I

(Intensive Eight Week Course)

Introduction to the body

Anatomy and physiology

Lifting, handling and equipment

General principles

Carry chair

Lifting aids

Patient positioning

Multi-posture cot

Rescue stretchers

Light rescue

Respiratory system

Anatomy and physiology

Chest injuries

Chest diseases and salbutamol

Drowning

Respiratory arrest

Circulatory system

Anatomy and physiology

Cardiac conditions

Cardiac monitoring

Shock

Blood pressure measurement

Faints

Cardiac monitoring

Defibrillation and monitoring

Airway management and resuscitation

Airway management and CPR

Oropharyngeal airways and resuscitation equipment

Entonox and oxygen

Suction equipment

Examination and assessment

Conscious patients

unconscious patients

Assisting the paramedic

Fluid administration

Drug administration

Airway management/intubation

Infants and children

Infants and children

Ambulance Technician Training II

Nervous system

Anatomy and physiology

Nervous disorders

Epilepsy

Cerebrovascular accidents

Skeletal system

Anatomy and physiology

Musculoskeletal trauma

Injuries to bones, joints, tendons and ligaments

Injuries to pelvis and spine

Immobilisation and support

Head injuries

Maxillo-facial injuries

Removal of crash helmet

Wounds and bleeding

Wounds and bleeding

Burns and scalds

Eye injuries

Management of trauma

Infectious diseases

General

Category 1 and 2 diseases

Category 3 diseases

Aids and HIV

Infants and children

Child abuse

Ambulance Technician Training III

Digestive system

Anatomy and physiology

Diabetes and glucagon

Diabetes and glucagon

Law and ambulance staff

Law and ambulance staff

Suspected death and management of bodies

Violent patients

Mental illness

Major incidents

Major incidents
Hazardous substances

Civil disturbances

Poisoning

Poisoning
Solvent abuse

Extremes of body temperature

Extremes of temperature

Maternity

Maternity
Premature babies and incubators

Haemodialysis

Haemodialysis

Acute abdominal problems

Acute abdominal problems

Infants and children

Infants and children

APPENDIX 7 Paramedic Medical Training in the Ambulance Services

Divided into 3 stages requiring a minimum of 320 hours

Stage 1 (1 weeks duration followed by an examination)

Anatomy	
Physiology and patient management	40 hours minimum

Stage 2 (3 weeks duration)

Ambulance Paramedic skills - Theory and Practice	120 hours minimum
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Stage 3 (4 weeks duration in hospital)

Hospital secondment	160 hours minimum
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Trainee paramedics must attend following departments-

<i>Operating theatre / anaesthetic department</i>	<i>80 hours</i>
---	-----------------

<i>Coronary Care Unit (CCU)/Intensive Therapy Unit (ITU)</i>	<i>40 hours</i>
--	-----------------

<i>Accident and Emergency Department</i>	<i>40 hours</i>
--	-----------------

STAGE 1 : ANATOMY, PHYSIOLOGY AND PATIENT MANAGEMENT

Introduction to paramedic training

The aim of ambulance paramedics

Working relationships with medical and nursing staff

Code of practice

Health and safety

Hygiene

Security of equipment

The respiratory system

Structure and function of the respiratory tract

The maxillo-facial skeleton

Structure and function of the lungs

Mechanisms of respiration

Nervous and chemical control of respiration

Composition of inhaled and exhaled air

Volumes of respired air and respiratory rates

The cardiovascular system

The anatomy of the heart and coronary circulation

Cardiac cycle, rates and rhythm

Conducting mechanism of the heart

Normal ECG and sinus rhythm

Chemical and nervous control of the cardiovascular system

Blood volume and blood pressure

Intracellular and extracellular fluids

Structure and function of the systemic, pulmonary and bronchial systems

Composition of the blood

Blood grouping and compatibility (A, B, O and Rh systems only)

The nervous system

Structure and function of the central nervous system, i.e.

- motor and sensory nerves
- cerebrum, cerebellum, mid-brain and medulla oblongata
- spinal cord and the meninges
- cerebrospinal fluid

Peripheral nerves

Sympathetic and parasympathetic nerves

Reflex actions

Observation and assessment

Triage

Patient's history

Assessment and baseline checks

Unconsciousness and the Glasgow Coma Scale

New Trauma Score

Blood pressure

Pulse oximetry

Patient monitoring and re-assessment

Patient reports

Stage 2: Ambulance paramedic skills - theory and practice

Endotracheal intubation

The indications for endotracheal intubation

Intubation equipment

Intubation tubes

Intubation procedures

Paediatric intubation

Management of problems and difficulties

Extubation procedure

Oxygen therapy and airway adjuncts

Intravenous cannulation

Indications for intravenous cannulation

Cannulation equipment including choice of cannula

Cannulation and venepuncture sites

Cannulation protocol

Management of problems and difficulties

Paediatric cannulation

Personal protection from blood borne diseases

Fluid administration

Infusion equipment

Preparation of a giving-set

Infusion fluids

Indications of fluid administration

Hazards and complications of infusion
Paediatric treatment

Blood samples

Trauma

The five stages of pre-hospital management
Circumstances requiring medical assistance
Resuscitation
Central respiratory drive failure
Airway failure
Chest mechanical failure
Management of tension pneumothorax
Management of open pneumothorax

Circulation

Five types of shock
Signs and symptoms of shock
Compensatory responses of hypovolaemic shock
Recognition and assessment of paediatric hypovolaemia

Secondary assessment

Head injuries
Maxillo-facial injuries
Eye injuries
Chest injuries
Abdominal injuries
Limb fractures

Thermal injuries

Assessment of severity
Problems and complications
Management of burn injuries
Fluid replacement

Pregnancy

Positioning of a pregnant patient

Transfer to hospital

Patient checks before loading into ambulance
Patient checks en route to hospital
Recording of patient details
Patient reporting to hospital staff

Cardiac conditions

Angina pectoris
Myocardial infarction
Heart failure
Cardiac arrest

The electrocardiogram

Description of the electrocardiogram

Wave forms
ECG paper
Electrodes

The normal ECG

Cardiac arrhythmias

Normal sinus rhythm
Ventricular fibrillation
Ventricular tachycardia
Supraventricular tachycardia
Ventricular extrasystoles
Asystole
Electromechanical dissociation
Heart blocks (1st, 2nd, 3rd degree and bundle branch)
Sinus bradycardia
Sinus tachycardia

Management of cardiac emergencies

Unstable angina
Myocardial infarction
Ventricular extrasystoles
Ventricular tachycardia
Supraventricular tachycardia
Heart blocks (1st, 2nd, 3rd degree and bundle branch)
Heart failure
Cardiogenic shock
Cardiac arrest
Defibrillation protocol and safety procedures
Drugs used in cardiac emergencies

Epileptiform convulsions

Management of status epilepticus
Drugs and drug routes used
Management of convulsions in children

Diabetes mellitus

Types and complications of diabetes
Drugs in common use
Management of diabetic hypoglycaemic coma

Management of respiratory emergencies

Bronchial asthma
Chronic bronchitis and emphysema
Alveolar diseases
Injury
Interference with the mechanisms of breathing
Pulmonary emboli
Upper airway obstruction
Oxygen therapy
Nebulised bronchodilator therapy

Paediatrics

Assessment and examination

Respiratory problems

-laryngotracheitis (croup)

-acute epiglottitis

-hypoxia

-asthma

-bronchitis

Airway obstruction

-the tongue

-foreign bodies

-trauma

Recognition and management of convulsions

Management of sudden infant death syndrome

Drugs

Legal requirements and security

Presentation and packaging of drugs

Preparation of administration

Routes and methods of administration

-buccal (oral)

-rectal

-subcutaneous

-intramuscular

-intravenous

pulmonary, including:

-endotracheal

-nebulisation

-aerosol inhaler

Use, effects, indications and contra-indications of:

-adrenaline

-atropine

-dextrose 50 %

-diazepam

-ergometrine

-glucagon

-glyceryl trinitrate spray

-Haemaccel/Gelofusine

-Heplok/Hepsal

-lignocaine hydrochloride

-nalbuphine hydrochloride (Nurbain)

-naloxone

-normal saline

-salbutamol

-sodium bicarbonate

Stage 3: Hospital secondment

Airway management

Positioning of the patient

Oropharyngeal airway

Oropharyngeal suction and toilet

Artificial ventilation

Use of bag-and-mask
Use of mechanical ventilator/resuscitator
Endotracheal intubation

Blood sampling

Taking blood
Labelling of blood samples

Intravenous infusion

Aseptic assembly of equipment
Intravenous cannulation
Establishment and management of intravenous infusion

Electrocardiography

Normal sinus rhythm
Sinus bradycardia
Sinus tachycardia
Asystole
Supraventricular tachycardia
Ventricular extrasystoles
Ventricular tachycardia
Ventricular fibrillation
Heart blocks (1st, 2nd, 3rd degree and bundle branch)
Electromechanical dissociation

Defibrillation

Safety procedures
Use of defibrillator

Use of drugs

Preparation of drugs for administration
Administration of drugs
Drug routes

Assessment and diagnosis

Taking and recording:
-pulse
-blood pressure
-respiratory rate
Glasgow Coma Scale
Temperature
Skin (texture/colour)
Trauma scoring

Essential equipment

Defibrillator
Paraguard stretcher
Entonox set (for pain relief)
Cervical collars (full set of six)

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