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Qualification of ship doctors: a German approach

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ABSTRACT

Background: *While a steady growth of cruise tourism since the 1970s created an increasing demand for ship doctors medical postgraduate specialty training did not sufficiently reflect the scope of skills and knowledge required from a physician being left to himself at sea. The German Maritime Health Association therefore tasked a working group with analysing the situation and coming up with suggestions for an adequate postgraduate training for ship doctors.*

Materials and methods: *The working group consisted of 19 experts with various backgrounds in maritime medicine. A literature review was done on cruise ship epidemiology as well as an assessment of tasks and environmental factors influencing medical care on board of cruise ships. Necessary knowledge and skills were derived and compared with those imparted by standard German medical education.*

Results: *Mandatory knowledge and skills were identified as well as elements of standard medical education contributing to these goals. Those aspects that would or could not be adequately covered by German standard education were catalogued and summarised in a course curriculum.*

Conclusions: *In 2013 after approval by its board of directors the German Maritime Health Association published a qualification and training recommendation addressing colleagues planning to muster as ship doctors.*

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Key words: maritime medicine, cruise medicine, ship doctors, ship hospital, qualification

INTRODUCTION

From 2009 to 2014 the number of German passengers almost doubled to 1.7 million per year [1]. Three major cruise lines (accounting for 20 ships) are presently based in Germany together with a considerable number of smaller companies and travel agents offering sea cruises. Today — in terms of passengers — Germany is number two on the European cruise market about to challenge Great Britain as the traditional number one. This created a demand for German speaking doctors. At the same time — in an increasingly flexible labour market — alternatives to a merely clinical career seemed to become more desirable for physicians.

When the German Maritime Health Association (Deutsche Gesellschaft für Maritime Medizin — DGMM) organised a symposium on cruise medicine in 2010 its board of directors was surprised by the response and the request for guidance to adequately prepare for shipboard medicine.

Therefore DGMM established a working group tasked with developing a qualification guideline.

MATERIALS AND METHODS

Following a call for participation, 19 experts with background in maritime medicine responded to contribute to the project [2]. A Forum was established mostly by email communication. The expertise ranged from colleagues with years of shipboard experience in the cruise sector as well as in research shipping and the Navy to those working in travel medicine, emergency medicine, general practice, surgery, anaesthesiology, occupational medicine, hygiene, seafarer's medical examination etc. Three providers of special training for ship doctors as well as the two German Institutes of Maritime Medicine (Navy and civilian) were also represented.

The working group started looking for similar efforts and found:

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— The guideline of the American College of Emergency Physicians (ACEP) — first published in 1996 — that meanwhile has been adopted by the Cruise Line International Association [3]. It was obvious, however, that while the cruise industry — like all seafaring — is an international business, medical credentialing and licensing is still a very national issue. It was felt, therefore, that any recommendation for the necessary qualification of ship doctors needed to be based on or adjusted to national or European regulations for medical education.
— The German Navy curriculum for their ship doctors. It was analysed but considered to reach far beyond the necessities of civilian cruise shipping. Originally this curriculum was certified by the Schleswig-Holstein state chamber of physicians but discontinued in 2012.
— A guideline that existed for several years in Germany, issued by an advisory board on ship hygiene of the German coastal states for the certification of physicians for shipboard employment. While this guideline pertained to German flagged ships only it required little special maritime medical education and finally there was a debate on how far it would be legally binding anyway [4].
— Finally the group looked at the curricula of the 3 providers of ship doctor's training that had emerged since 2011.

Given the limitations of the 3 mentioned guidelines, the group decided to continue with a suggestion apart from these precursors.

Following this decision the working group conducted a literature review in order to evidence-base its recommendation on epidemiological data. A considerable number of publications were found dealing with that matter. Almost all were empirical or descriptive in nature. Publications had a quantitative bias for the outbreak of infectious disease which however clearly did not reflect the majority nor necessarily the severity of cases seen aboard the vessels.

Next the working group went ahead and — based on its collective personal experience — analysed what might constitute the scope of medical tasks aboard a cruise ship and the working environment of a ship's doctor. Mandatory knowledge and skills were derived and compared with those that could be acquired within under- or postgraduate medical education in Germany. Results were compiled and discussed during a one day meeting. The group's chairman was tasked to summarise the results. These were then circulated among the group and — with all comments received — brought before the board of directors. Another half day meeting produced a final draft that was then accepted by the DGMM board.

RESULTS

The official recommendation was published in German by DGMM in May 2013 [2]. Below is an English translation of the document.

RECOMMENDATION FOR THE QUALIFICATION OF SHIP DOCTORS

Basic precondition for an employment on board is the proof of physical fitness according to the requirements of the respective flag state (in Germany according to §18 Seamen's Law). Beyond that it is recommended to base the qualification for a job as ship's doctor on the following:

— Specialty training according to the regulations of the responsible state medical chamber (as outlined in #1 below),
— Continuing medical education as established as well as nonmedical training (as outlined in #1 and #2 below),
— Participation in training courses for ship doctors as explained in this recommendation (as outlined in #3 below). Certification by the responsible state medical chamber should be aspired.

1. **Basic Qualification:**

   DGMM considers board certification according to regulations of state medical chambers as a prerequisite for a job on board.

   Given the epidemiological data, this certification should be in general medicine. Alternatively, basic qualification can also be achieved by a certification in internal medicine, surgery or anaesthesiology.

   DGMM recommends at least 6 months of surgery and of internal medicine to be part of one's speciality training.

   Beyond that a certification in emergency medicine is deemed necessary.

   Upon embarkation a proof of continued engagement in emergency medicine or intensive care during the last 3 years or participation in a refresher training within the last 2 years should be provided.
2. Given the equipment of the ship's hospital, **additional medical training** is recommended as follows:

— a valid certification in radiation-protection;
— participation in basic and advanced courses on ultrasound diagnostic (abdominal and retroperitoneal; as established by the German Medical Association for Ultrasound [5]);
— proof of proper instruction in the handling of all medical equipment on board according to the legal requirements of the flag state.

The international Convention on Standards of Training, Certification and Watchkeeping [6] usually requires the following non-medical training:

— participation at least in a safety familiarisation training (consultation with shipping company suggested);
— crowd and crisis course — 2 days and finally;
— sufficient skills in English; DGMM holds the opinion that the focus should be on nautical and medical terminology and the competence level B2 [7] should be achieved.

3. Finally, DGMM regards participation in one or several (consecutive) **training courses for ship doctors** as essential before starting into the job. Contents and time frames should be oriented towards the following suggestions (1 UE = educational unit; ~45 min):

Course 1

A. Maritime Basics; The ship, ship operation and maritime environment (UE = educational unit; usually 45 min)

Introduction to ship construction, operation, organisation	2 UE
The ship's doctor: position, rights and obligations	1 UE
Legal issues: liability, taxes, insurance	2 UE
International regulations; ILO, IMO, WHO; IMG, Maritime Labour Convention, SOLAS	2 UE
Medical team, hospital, pharmacy	2 UE
Safety of drugs and medical equipment	2 UE
Crew: multi-ethnic and multicultural issues	2 UE
Crew: preventative care and occupational health, fitness to sail	2 UE
Dangerous goods: risk profiles, safety instructions, intoxications; MFAG	2 UE
Potable water hygiene: technical basics and control measures	2 UE
Food hygiene, ShipSan [8], VSP	2 UE
Accommodation and sanitary/personal hygiene, waste disposal; MARPOL, HACCP	1 UE
Hospital hygiene	1 UE
Air condition/ventilation hygiene	1 UE
Case examples	5 UE
Site inspections	5 UE
	34 UE

Course 2

B. Maritime Specialties

Travel medicine, tropical medicine	2 UE
Vaccination and prophylaxis	1 UE
Epidemiology, outbreak management, surveillance	2 UE
Cooperation with port authorities	1 UE
Substance abuse	2 UE
Sexual harassment	1 UE
Forensic: criminal investigation, safeguarding of evidence, chain of custody. Declaration of death, handling of corpses	2 UE
Crew health protection and promotion	1 UE
International law and liability insurance	1 UE
Case examples	2 UE

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B. Maritime Specialties (cont.)

Management of simple emergencies; emergency codes, action-plans, cooperation and communication on board	1 UE
Telemedical assistance; medical assistance services	1 UE
MedEvac: rescue services, tender boat and helicopter operations	1 UE
MedEvac exercise (simulation)	2 UE
Safety/security, ISPS Code, ship safety and security plans and roles	1 UE
Major emergency situations	1 UE
Major emergency situations: cooperation with rescue services, other ships	2 UE
Abandon ship/lifeboat operation, medical aspects	1 UE
Survival at sea; drowning, seasickness, hypothermia	2 UE
Exercise/simulation	5 UE
	32 UE

Course 3

C. Medical specialties at sea: handling of common conditions and emergencies

Dentistry introduction	2 UE
Dentistry: practical training	3 UE
Paediatric conditions	1 UE
Case examples/simulation	1 UE
ENT conditions/emergencies	1 UE
Case examples/simulation	1 UE
Urologic emergencies	1 UE
Case examples/simulation	1 UE
Ob/gyn conditions/emergencies	1 UE
Case examples/simulation/practical training	1 UE
Emergencies in ophthalmology	1 UE
Practical training	1 UE
Dermatological conditions or emergencies	1 UE
Case examples	1 UE
Neurological emergencies	1 UE
Psychiatric emergencies	1 UE
Surgical/orthopaedic emergencies	3 UE
Simulation-training	2 UE
Burns/inhalation trauma	2 UE
Case examples	1 UE
(Near-) drowning, submersion, hypothermia, seasickness	2 UE
Case examples, resuscitation training	1 UE
Emergencies in internal medicine	3 UE
Simulation training	2 UE
	35 UE

DISCUSSION

The epidemiological publications showed that up to 70% of cruise ship patients are general or internal medicine cases [9]. The surgical cases were mostly less severe as sprained ankles, abrasions, minor cuts (galley) and burns (engine) [10, 11]. These numbers gave an idea of where to go.

At present doctors would be on board only a limited time of their professional life and best medical practice at sea should not differ unnecessarily from that ashore. The working group therefore held the opinion that postgraduate and specialty training should be taken as available and augmented by training elements that would provide the necessary extra elements.

The resulting recommendation was that a future ship's doctor should be qualified in general or internal medicine preferably. Surgery or anaesthesiology would be acceptable as these would cover many of potentially critical emergencies that could occur on board. The working group therefore felt that these specialties should and for legal reasons could not be totally excluded.

As in many other countries in Germany undergraduate medical education is immediately followed by specialty training and subspecialisation even. With the bandwidth of medical responsibilities at sea and limited access to medical facilities ashore a general practitioner or an internist should be experienced in two critical fields: surgery and emergency medicine. Vice versa the surgeon or the anaesthesiologist should be proficient in general/internal medicine. Six months of training were considered to be a minimum.

Ship doctors further should keep themselves up to date especially in handling the most common emergencies of their own and the respective alternative field.

A valid certification for emergency medicine was deemed mandatory including proof of being up to date through either continued engagement or recent training in this field.

It needs to be mentioned that in Germany — other than in the United States — emergency medicine is strictly pre-hospital. Certification in emergency medicine is based on successful participation in postgraduate courses and training within pre-hospital emergency services.

There is a subspecialty certification in clinical 'intensive medicine' for internists. Intensive care units often are run by anaesthesiologists. Emergency rooms in hospitals are staffed by teams of classical specialties (mainly surgery, internal medicine and anaesthesiology). With this background the working group recommended that ship doctors should seek additional practical training in hospital emergency rooms as under prevailing weather and geographical conditions they might be responsible for emergency patients for an extended period of time (see below).

At the end it was consensus that the 4 above mentioned specialties would complement each other at sea. If there would be more than one doctor on board a mixture of different training backgrounds should be considered. This would especially hold true if the tour profile encompassed remote areas as in so called 'expeditionary cruises' (Amazon River or the Arctic/Antarctic regions for instance).

The ship's doctor should also be certified for X-ray and ultrasound — cardiac, abdominal and retroperitoneal preferably — if such equipment is available on board. German regulations finally call for a proof of proper familiarisation before handling any technical medical equipment like ventilators, defibrillators etc. Such equipment already being or increasingly becoming the standard on board of ships operated from Germany. In addition digitalised X-ray as well as ECG/AED and ultrasound equipment having online capabilities are valuable tools in telemedical advice and therefore ship doctors should have an idea of capabilities implicit to tele-consulting.

Mandatory non-medical training as specified in international rules (SOLAS [12] and STCW Conventions) includes:

— (basic) safety training;
— crowd and crisis management training.

And — needless to mention — a doctor too has to be examined for fitness to sail.

For communication not only on board but also with radio medical advice or follow up medical services ashore it was recommended that German doctors be certified in nautical and medical English on an advanced level. The recommendation asks for level B2 according to the German Goethe Institutes' criteria. These meanwhile were adopted into European framework regulations.

In its analysis of the medical task profile and relevant environmental factors the working group concluded that medical care at sea was characterised mainly:

— by the absence of the highly developed network structures for medical care that rely on specialisation, interoperability and timely availability to provide best medical care for any given problem and as a consequence require early and advanced specialisation of physicians, and
— by the fact that one medical facility with a limited number of physicians (seldom more than two!) a ship's doctor would — at least initially (for hours or even days) — be responsible for a spectrum of medical issues not necessarily reflected in his or her specialty training and that given the variety of the clients (passengers and crew) as well as the different 'habitat ship' there would be issues that even in a developed system of medical care ashore might cause difficulty to meet the adequate expertise.

Consequently, the working group felt that simply relying on 'off the shelf' medical education and training would convey only part of the knowledge and skills necessary to responsibly function as the only (or one of few) medical experts at sea.

The other part should be:

— intimate knowledge of conditions at sea;
— of ship's construction and organisation;
— of the relevant international regulations, and
— basic knowledge of shipboard occupational health and hygiene;

and it should address special medical challenges at sea ranging from:

— travel or tropical medicine to;
— drugs, alcohol and sexual harassment;
— handling of corpses;
— cooperation with port state authorities;
— seasickness and last but not least;
— the management of emergencies — single and mass — including;
— abandon ship, survival at sea, immersion, drowning, and hypothermia.

Also a ship's doctor should be able to handle — as a first responder — with the given means on board a whole variety of problems ranging from dental to paediatrics, dermatology, ophthalmology, ob/gyn etc. — frequent conditions and especially their emergencies for a prolonged period — a situation neither reflected in hospital emergency rooms nor in the context of prehospital emergency care.

The working group collected a list of all relevant topics and suggested course curricula conceived to cover them (see above). The curricula were given a tentative time schedule that resulted in an equivalent of three weeks of training.

The 'clinical' modules concentrate on the most common problems in each field. Reflecting the means available on board they should try to give a common sense diagnostic approach, an idea for treatment to at least stabilise the condition, and ways for further management as necessary. It was felt that this best could be done by as much practical hands on training as possible, including up to date simulation technology. Thus to develop basic skills that could be refined using for instance telemedical support.

As compared to the ACEP *guidelines,* the DGMM *recommendation* does not address questions of how shipboard medical facilities should be set up, equipped and run. Instead it goes into more detail with regard to required or desirable qualification of the physician staff members on board of cruise ships. In that respect it goes beyond the merely clinical criteria of the ACEP guidelines and reflects German regulations on postgraduate training and credentialing that differ from United States standards with regard to the certification in emergency medicine for instance. The working group held the opinion that the ACEP guidelines, asking for current medical license and board certification either in emergency medicine or family practice or internal medicine and a variety of other clinical skills would not fully suffice the needs of a novice ship doctor. Therefore the handling of common conditions or emergencies of an array of different medical specialties (including dentistry) were added to the course curricula introductory lectures and training. Also a centre of gravity in the preparation for a shipboard job would be the intimate knowledge of the working conditions on board determining medical practice as well as the presentation of health problems and their management.

As an example: a doctor should be aware of such special challenges as seasickness, near drowning and hypothermia, outbreak of infectious disease, medical aspects of criminal acts (including piracy), abandon ship and survival at sea to name only a few [13].

CONCLUSIONS

The DGMM recommendation should not be mistaken as a medical guideline. It primarily addresses German physicians to help them assess whether or not they could responsibly go onto a tour of duty at sea or what they possibly should add to their previous qualification. It is tailored mainly to novices. Experienced ship doctors will have acquired much of the knowledge and skills mentioned over the years but might just take it to check a possible benefit to refresh, complete or update their training.

It is not intended to replace cruise companies guidelines for hiring doctors as conditions may vary from ship to ship and with different tour profiles.

As mentioned above, also credentialing and licensing is different with regard to where the doctor received his or her education as well as with regard to the ship's flag state. It may however help to line up such a hiring policy with the recommendation as suitable — especially with regard to liability cases where courts might look for applicable medical standards.

The way ahead:

In Germany presently 3 providers of training for ship doctors follow the DGMM recommendation. One is strictly land based, another does a compact 10 days shipboard course and the third has a mixture of e-learning and hands on modules — the latter aiming to provide the practical skills.

The DGMM board of directors subjected the recommendation to a periodical biennial review process:

It is obvious that the issue of adding surgery and anaesthesiology will need reflection and a more detailed recommendation on how to acquire and keep current in the respective alternative fields.

The course curricula will be scrutinised for necessary additional topics. Diving medicine (evaluation of fitness and primary handling of accidents) would be a candidate, depending on tour profiles including such activities. Other topics may prove obsolete and the time estimates need to be reviewed.

Another interesting question will be how much of these curricula will be suitable for online education.

The next review will be done early in 2015 together with the course providers who currently orientate their curricula at the DGMM recommendation.

Finally, we hope to stimulate discussion on the European level in order to have an internationally agreed inter-operative standard allowing doctors to be hired on ships of various flags; hopefully contributing to the goal that crews and passengers can rely on a high level of medical care at sea in accordance with Maritime Labour Convention's standard A 4.1 [14], asking that '*any seaman should get medical care at sea as equivalent as possible to what she or he can expect ashore'!*

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CONFLICTS OF INTEREST

K. Seidenstuecker is giving lectures for the Schiffsarztboerse — one of the three course providers mentioned in the text.

REFERENCES

1. Statistica. Passagiere von Hochseekreuzfahrten in Deutschland. www.de.statistica.com/statistik/dates/studie/5240/umfrage/passagiere-von-hochseekreuzfahrten-in-deutschland-seit-1998/ (accessed November 28, 2014).
2. Deutsche Gesellschaft fuer Maritime Medizin. Empfehlung fuer die Qualifikation von Schiffsaerzten. www.maritimemdizin.de/Publikationen/leitlinien/Schiffsarztqualifikation-Empfehlung%20Endfassung.pdf (accessed July 09, 2014).
3. American College of Emergency Physicians. Health Care Guidelines for Cruise Ship Medical Facilities. www.acep.org/Physician-Resources/Clinical/Health-Care-Guidelines-for-Cruise-Ship-Medical-Facilities/ (accessed July 09, 2014).
4. Arbeitskreis der Kuestenlaender fuer Schiffshygiene. Richtlinie Nr. 4 – Aufnahme einer Taetigkeit als Schiffsaerztin/-arzt -. 12.11.2008.
5. Deutsche Gesellschaft fuer Ultraschall in der Medizin e.V. Zertifizierte Kurse. www.degum.de/service/zertifizierte Kurse.html (accessed November 27, 2014).
6. International Maritime Organisation, Convention on Standards of Training, Certification and Watchkeeping. www.mptusa.com/pdf/STCW_guide_english.pdf (ITFW Guide; accessed November 27, 2014).
7. Council of Europe. Common European Framework of Reference for Languages. www.coe.int/t/dg4/linguistic/source/framework_en.pdf (accessed November 27, 2014).
8. European Union. ShipSan Act. www.shipsan.eu (accessed November 28, 2014).
9. Peake DE, Gray CL, Ludwig MR et al. Descriptive epidemiology of injury and illness among cruise ship passengers. Ann Emerg Med 1999; 33: 67–72.
10. Dahl E. Passenger accidents and injuries reported during 3 years on a cruise ship. Int Marit Health 2010; 61: 1–8.
11. Dahl E, Ulven A, Horneland AM. Crew accidents reported during 3 years on a cruise ship. Int Marit Health 2008; 59: 1–4.
12. International Maritime Organisation. Convention for the Safety of Life at Sea. www.imo.org/About/Conventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-(SOLAS)-1974.aspx (accessed November 27, 2014).
13. Dahl E. Cruise ship doctor: demands and challenges versus qualifications and training. Int Marit Health 2009; 60: 33–35.
14. International Labour Organisation. Maritime Labour Convention. www.ilo.org/wcmsp5/groups/public/—ed_norm/—normes/documents/normativeinstrument/wcms_090250.pdf (accessed July 09, 2014).