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The usefulness and practicality of the International Medical Guide for Ships

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ABSTRACT

Background: *The third edition of the International Medical Guide for Ships (IMGS) was published in 2007 and supported a main principle of the newly adopted International Maritime Labour Convention (MLC) 2006: to ensure that seafarers are given health protection and medical care as comparable as possible to that which is available to workers ashore. In 2021, the revisions and drafting of the fourth edition of the IMGS began. Taking the COVID-19 pandemic into consideration, it was decided that a stakeholder study was necessary to ascertain the usefulness and practicality of the guide as well as provide input for which new topics to include.*

Materials and methods: *The study applied data triangulation, with respondents from a geographically broad sample of the International Maritime Organization's five regional areas of the world. The data was analysed using thematic analysis.*

Results: *The results show that the IMGS is widely known and used among persons involved in medical care on board ships, but the IMGS is not as practical as stakeholders would wish it to be. For the guide to be useful, it must be ensured that telemedical advice information is included and if possible, ensure there is one single and global medical guide. Also, there is a need for new medical information, and respondents pointed to pandemic information, medicines list, medical chest, mental health issues, a women's section, updated cardiopulmonary resuscitation instructions, human immune defect virus information (human immune defect-virus) and information on how seafarers may self-monitor and be monitored on board in relation to chronic diseases.*

Conclusions: *Respondents understand a medicine chest on board is mandatory according to the MLC 2006, 98% are familiar with its content, and 86% use the IMGS.*

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Key words: medical guide, International Maritime Labour Convention (MLC) 2006, maritime health, seafarers' health, maritime medicine

INTRODUCTION

The first edition of the International Medical Guide for Ships (IMGS) was published by the World Health Organization (WHO) in 1967, with the intention of being the standard source of guidance for medical assistance to seafarers who fell ill or were injured. This was followed by a second edition that was published in 1988. The third and latest edition of the IMGS was published in 2007 [1], which included fully updated recommendations consistent with the latest revisions of both the WHO Model List of Essential Medicines and the International Health Regulations [2].

A year before the publication of the third edition of the IMGS, the International Labour Organization (ILO) convention, the International Maritime Labour Convention

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(MLC) was adopted on 23 February 2006, stipulating that all ships shall carry a medicine chest, medical equipment, and a medical guide [3]. The IMGS supported a main principle of the MLC: to ensure that seafarers are given health protection and medical care as comparable as possible to that which is available to workers ashore, including prompt access to the necessary medicines, medical equipment and facilities for diagnosis and treatment and to medical information and expertise. However, the list of medications in the third edition received some criticism for not providing enough guidance on medicines for minor ailments. This was of particular concern for users from flag states without national lists of medications to supplement the list in the IMGS. In 2009 a group of experts from WHO collaborating centres published an article with complementary guidance on the medical chest for IMGS users in response [4]. The problem of divergent advice for the medical chest was revisited in 2019, as there were still disparities in the regulations concerning the ship medicine chests, calling for harmonization of the requirements [5].

In 2021, the revisions of the fourth edition of the IMGS began, and the coronavirus disease 2019 (COVID-19) pandemic called for new knowledge and guidance. Not only due to the physical and medical consequences of the pandemic but also the increased mental health issues that arose because of it, including abandonment issues, lack of repatriation and restrictions on board. Societal changes and movements, telemedical advancements [6], increased focus on women in the maritime industry [7–9] and MLC 2006 amendments [10] have also contributed to the necessity of a revision. These arguments together with the fact that other medical guides exist or were being drafted, it was decided that a stakeholder study was necessary to ascertain the usefulness and practicality of the guide, and provide input for the revisions. This article reports the results from the stakeholder study.

The guiding research question was, how do stakeholders perceive the usefulness and practicality of the IMGS?

Usefulness relates to how relevant the medical content of the guide is, and practicality to how accessible necessary medical content is in practice.

MATERIALS AND METHODS

Seafaring as an occupation involves high risks when compared to land-based industries. Many studies have also documented cardiovascular risk factors and behavioural risk factors in the sector [11–23]. It is therefore extremely important to ensure equal access to healthcare, ensure health promotion initiatives and provide high quality and research-based information regarding seafarers' health to address the serious health issues that these studies present.

The MLC 2006, which came into effect on the 20th of August 2013, was an important breakthrough in relation to ensuring minimum requirements for seafarers' healthcare. The following amendments have been equally important, providing mechanisms and guidelines for efforts made [10]. As part of the MLC 2006, the IMGS has been a contribution to assisting health protection and medical care for seafarers.

Health promotion initiatives continue to take place, which play a role in assisting the behavioural changes needed to ensure seafarers' health [21]. Seafarers' mental health has received more attention in recent years [22, 23], also in cognizance of the COVID-19 pandemic, with many different industry initiatives and research studies. Ensuring healthy lives and promoting wellbeing are core elements of the United Nations Sustainable Development Goals (SDG), #3, and relevant to discuss in relation to seafarers' health and WHO goals for health and wellbeing in general [24, 25].

MATERIALS

The analyses undertaken in the study were conducted during December 2021–February 2022 by the authors. This study was set in motion by the International Maritime Organization (IMO) in collaboration with WHO to compile information and feedback from maritime stakeholders in relation to the usability and practicality of the IMGS.

The study is based on a combination of three data sources: an online questionnaire, online interviews based on an interview guide, and e-mail correspondence, all in English. This material will be made available from the authors for interested parties. The data corpus comprises 262 responses in all, distributed on:

- 246 questionnaire respondents;
- 10 online interviews;
- 6 email correspondences.

Maritime authorities were contacted based on the aim to acquire a geographically broad sample of respondents from the IMO five regions, Latin America and Caribbean, Asia and Pacific, Africa, Arab States and Mediterranean, Western Asia and Eastern Europe and a sixth sample region, Other States, and entities (Table 1). This was to ensure a response from across the globe and across both developed and developing countries. The purposeful sampling method was used [26] to enhance participation from the theoretically relevant population needed to take part in the survey.

The respondents represented an array of professional roles, ranging from port operators, doctors, and ship crews, to governments, institutions and service organizations, maritime academics, crew and officers unions, non-governmental organizations, charities, training institutes, shipping companies and pilots. Roughly half of the respondents claimed to be usually based at sea and three quarters

Table 1. Study respondent recruitment

Region	Country	Email 1	Email 2	Phone call	Recruit-ment	Question-naire link	Interview (10)
Latin America and Caribean	Argentina	X		X		X	
	Brazil	X	X	X			
	Bolivia	X	X				
	Uruguay	X	X				
	Panama	X	X	X	X	X	X
	Barbados	X	X	X			
Asia and Pacific	Kiribati	X		X		X	X
	Philippines	X			X	X	
	Vanuatu	X	X			X	
	Vietnam	X	X			X	
	Fiji	X	X			X	
	Myanmar	X	X	X		X	
	India	X	X		X	X	
	China	X	X			X	
	Japan	X	X			X	
Africa	Ghana	X	X	X			
	Kenya	X	X		X	X	X
	Liberia	X	X				
	Nigeria	X	X				
	South Africa	X	X				
Arab States and Mediterranean	Egypt	X	X	X	X	X	
	Tunisia	X	X			X	
	Malta	X	X			X	
	Italy	X	X	X		X	
	Kuwait	X	X			X	
	Qatar	X	X	X		X	
	UAE	X	X			X	
Eastern Asia and Eastern Europe	Turkey	X	X	X		X	X
	Cyprus	X	X			X	
	Russia	X	X			X	
	Bulgaria	X	X			X	
	Georgia	X	X			X	
	Ukraine	X	X		X	X	
	Lebanon	X	X	X		X	
Other States and Entities	France	X	X			X	X
	Norway	X	X		X	X	
	Denmark	X	X	X		X	X
	Germany	X	X			X	X
	Canada	X	X			X	
	UK	X	X	X		X	X
	USA	X	X	X		X	XX
	IMHA	X	X			X	
	CIRM	X	X			X	

X – 1; XX – 2

Table 2. Collected information about the respondents

	Number
Professional role	
Ship crew	103
Ship owner/operator/management	40
Government	5
Non-government organizations	9
Medical support	2
Doctor	43
Other (medical maritime teachers and trainers, consultants, retirees, port personnel)	42
Experience with medical care at sea	
Yes	180
No	54
Role when gaining experience with medical care at sea (only among the 180 with experience)	
Patient	3
Healthcare provider at sea	74
Remote shore-based medical assistance	23
Other (master, first aid, crew)	29

of them claimed to be involved in medical care at sea, mostly as a health care provider, Master, or shore-based medical assistance (Table 2). All respondents (89%) indicated to have medical training, some were medical doctors; however, most of them have received their training at a maritime medical care course or as part of their maritime training.

The interviews were analysed using thematic analysis, where meaning units are identified in the transcribed interviews [27]. A theme is formulated that dominates a natural meanings unit, so that the quotes are thematised based on the interview persons' perspective.

Interview and questionnaire questions were the same. However, in the interviews, respondents were asked to reflect or elaborate more on the issues where they seemed to have knowledge or an opinion, using questions such as follow-up questions [28].

Respondents unable to take part in the interviews or questionnaire survey were given the opportunity to contribute with comments to the IMGS, 3rd version or other information.

METHODS

Both qualitative and quantitative methods were used to ensure better validity of the results and to optimize the opportunity to acquire a varied set of responses that could answer the research question [29]. A preliminary questionnaire devised by the WHO was used to create the basis of questions for the interview guide and questionnaire. Questions were further developed and revised 6 times to ensure a set of questions that could provide answers to the research question. Trials were made of the interview to test the length of interviews and questionnaire response time needed. Invitation letters were drawn up and sent out to respondents.

Interviews enabled the compilation of knowledge that is not quantifiable but more in-depth knowledge of relevant issues relating to the IMGS.

The survey questionnaire was devised to capture a larger sample of potential respondents. This method was also chosen to allow respondents easy access to the survey, and to allow and enhance participation for respondents across the globe. This would enable a broad set of answers, across professional groups and geographical spheres. This data was quantified using Survey-Xact.

Purposeful sampling was used, which entails the process of recruiting respondents who are likely to have knowledge about the studied topic [26]. In this case we sought to recruit respondents who would be the target audience for the IMGS.

RESULTS

In reference to the research question, the data compilation was guided by two goals: (1) assess the usefulness of the guide for end users and stakeholders; (2) assess the practicality of the guide for end users and stakeholders.

It can be noted that under the question of usefulness, queries were included as to input for new medical information necessary in the IMGS. The results are presented in accordance with these two goals.

USEFULNESS

The IMGS is both known and used among persons involved with medical care on board ships worldwide according to questionnaire respondents. In fact, 81% of the respondents are familiar with the IMGS.

The respondents across all data sources indicated that the medical problems they had encountered while involved in medical care at sea were various forms of injuries, infections, pains, and cardiovascular diseases. Other less frequently mentioned problems were mental health problems, kidney, or urinary stones, burns, hernia, COVID-19, tooth aches, ectopic pregnancy, diabetes, suicide, and meningitis. In dealing with these situations most of the respondents (70% in the questionnaire survey) used the IMGS. The rest had used other materials such as the CIRM (International Radio Medical Centre based in Rome) or Radio Medical, the Ship Captain's Medical Guide, a company manual, or national Clinical Practice Guidelines.

The following quote sums up several of the issues that respondents raised in the interviews: *"It is too big. It can put people off. It is for a person who is NOT a doctor, and you need to make it easily accessible for a lay person. A seafarer faced with asthma or who is breathless. You need something concise — what is the problem and what you should do? Make it near to a manual. The guide is more a book and more old-fashioned first aid version. They could always get the in-depth in another version. Tele coms are increasing, and they can get valid info, and the IMGS could be better written to suit this. There is a lot of emphasis on the severe conditions which are rare — do the more common things. Present in the accordance to the likelihood of their occurrence"*.

One respondent found that it is difficult to find answers to specific questions. Another response in line with this was, "*incredibly thorough, very comprehensive, but how easy is it to use? How quick can they get to the necessary information?*". Another respondent offered an explanation: "*For most applications, it is too involved. It appears to be geared towards vessels without ready access to shore side physician advisory services. A pared down version with instructions for procedures would be more helpful. Teaching on-board medical personnel how to assess an issue and communicate with shore-based providers is more helpful than trying to train on specific diagnoses*".

Some respondents referred to the discussion about the medical chest in the introduction. They called for an updated list based on an agreed international standard, together with a procedure for keeping it updated and linked to online sources. One interview respondent elaborated: "*The medications are very Eurocentric. In [region] we do not use medical honey. Some of the recommended medications (mebendazole) are unreasonably expensive in [region] without good substitutions. The recommendations for post exposure prophylaxis are inadequate and outdated. Many of the medical chest recommendations are inadequate or outdated*".

The respondents were asked what other materials they had used as a reference. Interview responses were aligned with the questionnaire results, and this included national guides, websites, and YouTube videos. Some respondents also informed that they created their own documents to guide medical staff in assessment and communication with personnel at sea.

E-mail respondents informed that the usefulness of the IMGS may be enhanced by using a maritime doctor in the revisions and further updates. This would enhance a more maritime linguistic approach that would be understood by seafarers using the guide, and this would also lend more trust to the IMGS as a useful resource in maritime health and care. In line with the interview data, e-mail respondents asserted that the IMGS does not in its current form take note of the current use of telemedical services. Respondents also found it vital that it is sought to arrive at a single and global medical guide, as the many diverse documents and origins are confusing and create unnecessary difficulties for seafarers. However, many of these different guides are used by the sector and each of them receives credit from respondents. Some respondents contest the intentions of WHO in engaging in the IMGS, as it is the single maritime health issue involvement. The price of the IMGS book version was also contested.

In conclusion, respondents across data sources requested to add guidance for:

- COVID-19 and pandemics;
- psychological diseases/mental health;
- issues relating to a growing number of female seafarers, such as sexual harassment and diseases or conditions specific to women;
- monitoring of chronic diseases.

The interview and e-mail respondents found mental health issues to be especially important to expand on. The COVID-19 situation has only heightened this necessity. Telemedicine must be more involved in a revised guide as this has developed in comparison to the last version, and restrictions due to COVID-19 have called for telemedical assistance.

PRACTICALITY

For the guide to be more practical, it must include improvements of the medicine chest and the list of medicines, and this was frequently mentioned in the data.

As much as 96% of the respondents were aware that a medicine chest on board is mandatory according to MLC 2006 and 98% reported to be familiar with its content. When asked which medical guides are used in accordance with MLC 2006, 86% answered IMGS, and the remaining responses referred to the Ship Captain's Medical Guide [30], as the most used guide.

The majority (74%) of the respondents had not experienced difficulties in the practical usage of the IMGS. The remaining responses indicated that it was difficult to find the right chapter, the wording in the guide was too technical, or it was too long. Other reasons mentioned were issues with medications:

- *"Lack of clarity on medications. Discusses issues rather than giving clear decision aids";*
- *"Some medicines obsolete";*
- *"Medicine Chest requirements are missing in IMGS 3rd Edition. Supplement does not provide authoritative guidance";*
- *"Medicines not found in the medical chest".*

Despite most respondents having not found difficulties in using the guide, respondents across all data sources

remarked that the IMGS would benefit from being more structured and include easier access to the information needed. The interview data is not representative, with only ten respondents. However, the responses are similar to the questionnaire data.

The responses reflect the questionnaire results well, with injuries and infections being common, and in addition, also chronic diseases, and cardiovascular issues. The pointers to mental/psychological diseases and COVID-19 also correspond to the questionnaire and email results.

In conclusion, the IMGS is not perceived as practical as stakeholders would wish it to be. Although the respondents find what they need, they report that it lacks an appropriate structure and medical information is missing. It is also difficult for respondents when the medicine that they have on board does not correspond to the information in the IMGS. The following suggestions were made to enhance practicality:

- *"A book and an online version are highly preferred and viewed practical";*
- *"Use of pictures, videos or checklists are preferred";*
- *"Use of pull-out pages";*
- *"Include more action-oriented information and general cases";*
- *"Training in usage of the IMGS and new updates";*
- *"Ensure that there is one single, global medical guide";*
- *"Draw up a plan for future publications and consistent revisions of the IMGS".*

DISCUSSION

The study presented here has drawn on three data sources to investigate the usability and practicality of the IMGS across all five IMO regions and a sixth sample region.

There were three predominant tendencies that arose from the data, pointing out the need for more attention to telemedicine, pandemics, and mental health issues in a future revised version of the guide.

Telemedicine has expanded since the previous edition of the guide was published. The more frequent use of telemedicine may tend to make the IMGS more of a supplement than a stand-alone piece, hence the referenced wishes for a shorter version with only the essential information. However, as reported in a recent review article, there are still many limitations to the provision of adequate medical care at sea and there are still vessels operating without telemedicine assistance [6]. This includes the difference in availability between cruise ships and merchant ships, as the latter often has weak or no access to internet facilities. This is a dilemma that needs to be addressed, as we have the technology to provide seafarers with equal access to health, but it is simply not supported. Email and telephone are therefore the principal means of providing medical advice as well as assistance for patients at sea [6]. To ensure equal access to health, the data informs both a need for a comprehensive version and a smaller and more accessible version.

The survey also reports other new tendencies, with frequent mentions in the data of mental health at sea and women's health issues. Mental health issues have received more attention lately, with two important studies prior to the pandemic [22, 23], studies related to post pandemic issues and other precarious situations around the world [31]. This includes seafarers stranded on ships beyond the end of their contracts, unable to be repatriated due to COVID-19 related travel restrictions [32], and restrictions on board vessels that inhibited seafarers' needs for relatedness and wellbeing. Research calls for attention to seafarers' mental health, but also for the need to know how to assist seafarers and supervisors in mental health care situations, monitoring mental health well-being and having access to relevant training [31]. The #metoo movement in society has given more focus to the health care of female seafarers, and as one respondent advised, information as to how to deal with cases of gender-based attention or violence on board is necessary. This might reflect an increased awareness of these issues [7–9], but also an increased prevalence.

Another new tendency is the call for guidance for monitoring and maintenance of chronic diseases. This in part reflects the general population and its ageing workforce. But it also reflects a lack of practical information in the guide, or access to assistance that can help facilitate self-monitoring or access to a medical caregiver who may monitor the condition. Mapping this out could enable more seafarers to stay longer in the industry, in a time when it is difficult to recruit staff, and it could mitigate unnecessary situations involving repatriation or hospitalisation.

LIMITATIONS OF STUDY

The COVID-19 pandemic outbreak impacted a range of things, such as lack of access to respondents due to illness, understaffing, and some organizations had difficulty in allocating a person to participate.

Respondents reverted to emails and telephone calls late in the survey period, forcing the study to be prolonged. However, the extra month used was very instrumental in acquiring the large data corpus that was accomplished. A data category in the form of emails was included, as some respondents could not take part in interviews or questionnaires.

The questionnaire survey was set up to allow respondents to skip questions, to make it as easy as possible to answer. This means that not all respondents answered all questions. However, a large sample was compiled, with many comments written in free-text boxes.

CONCLUSIONS

The findings in the survey were similar across all three data sources. The data was analysed according to two goals: (1) assess the usefulness of the guide for end-users and stakeholders; (2) assess the practicality of the guide for end-users and stakeholders.

In relation to goal 1, respondents find that the IMGS is useful. Eighty-one per cent of the questionnaire respondents were familiar with the guide. The most frequent medical issues were various forms of injury, infections, pains, and cardiovascular diseases. However, despite the knowledge of the guide, telemedical services, medical training, and the Ship Captains Medical Guide [28] were mentioned as the most predominant other sources used to address medical problems. The many and varying sources are confusing for stakeholders. The level of comprehension of the IMGS is not helpful, there is too much information, which makes it difficult for a lay person to use. For the guide to be useful, it must include telemedical advice information and if possible, ensure there is one single global medical guide.

There is a need for new medical information and respondents have provided many suggestions (unprioritized list): Pandemic information and COVID-19, telemedicine, medicines list, medical chest, mental health issues, such as fatigue and stress, a women's section including information on sexual assault, updated cardiopulmonary resuscitation instructions, human immune defect-virus information and information on how seafarers may self-monitor and be monitored on board in relation to chronic diseases.

In relation to goal 2, the IMGS is not as practical as stakeholders would wish it to be. Although the respondents find what they need, the guide lacks some medical information. It is difficult for respondents when the medicine that they do have on board does not correspond to the information in the IMGS. Sometimes the book is too difficult for respondents to use, and it should therefore offer better explanations or guidance in the use of the IMGS. The respondents called for both a book and an online version to facilitate practicality. IT materials and online versions of the guide were suggested, although this should not replace a book version. Respondents suggested that the book should be developed to include more action-oriented cases and more general cases of typical ailments, also using pull-out pages to explain procedures. It was suggested that WHO provides a publication plan with more consistent updates of the IMGS.

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