Satakunnan ammattikorkeakoulu
Satakunta University of Applied Sciences

TUULIA SILLANPÄÄ

Comparative Analysis of Ship's Medical Store Regulations Under Finnish, Portuguese, and Maltese Flags

Development of Company Manuals and Inventory Tools for Langh Ship's Fleet

DEGREE PROGRAMME IN MARITIME MANAGEMENT,
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ABSTRACT

Sillanpää, Tuulia: Comparative Analysis of Ship's Medical Store Regulations Under Finnish, Portuguese, and Maltese Flags, Development of Company Manuals and Inventory Tools for Langh Ship's Fleet
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This functional thesis examines the regulatory frameworks governing ship's medical stores under the Finnish, Portuguese, and Maltese flags, with the aim of developing practical tools for officers responsible for medical care onboard Langh Ship vessels. Shipping is possibly the most international and hazardous industries and ensuring access to adequate medical supplies is essential to safeguard seafarers' health, particularly in the absence of onboard medical professional. The study employs an integrative literature review to establish a knowledge base and foundational understanding of international and national health regulations, followed by a qualitative document analysis of the legislative frameworks of the three selected flag states. The flags were chosen based on their relevance to Langh Ship's fleet.

The analysis revealed significant differences in clarity, accessibility, and specificity of the national regulations. Finnish legislation emerged as the most detailed and accessible, featuring comprehensive listings, defined responsibilities, storage requirements, and training mandates. Maltese regulations were moderately detailed but embedded within broader maritime legislation and lack some practical specifics. Portuguese documentation was the most limited, with English-language resources scarce and significant reliance on internal company documentation and unofficial translation.

As a result of the research, a development output was created consisting of three tailored company manuals, one for each flag, and accompanying Excel templates for inventory management. These outputs aim to enhance the practical usability of the ship's medical store, promote regulatory compliance, and standardize practices across the fleet. Selected parts of the manuals are presented in this thesis to illustrate excerpts, but the full materials are withheld due to their integration into the company's safety and quality management system. The study also concludes that there is a need for more practice-oriented medical training in maritime education and recommends further research into improving the accessibility and harmonization of medical regulations across flags.

Keywords: Ship's medical store, medical store manual

TIIVISTELMÄ

Sillanpää, Tuulia: Laiva-apteekin sääntelyn vertailu Suomen, Portugalin ja Maltan lippuvaltioiden välillä, Kehittämistyönä laaditut manuaalit Langh Shipin alusten laiva-apteekin hallintaan
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Tämä toiminnallinen opinnäytetyö tarkastelee kolmen valitun lippuvaltion, Suomen, Portugalin ja Maltan, lainsäädännöllisiä vaatimuksia laiva-apteekeille. Tutkimuksen tarkoituksena oli vertailla näiden valtioiden sääntelykehyksiä ja tuottaa käytännönläheinen kehittämistyö, joka tukee lääkinnällisestä hoidosta vastuussa olevia päällystön jäseniä laiva-apteekin hallinnassa. Tietoperusta rakennettiin aihetta käsittelevän kirjallisuuden ja lainsäädännön pohjalta, ja empiirisen osion tutkimusmenetelmänä käytettiin laadullista dokumenttianalyysiä. Ensisijainen aineisto kerättiin kansainvälisten järjestöjen julkaisuista sekä kolme lippuvaltion virallisista säädöksistä.

Vertaileva analyysi toi esiin merkittäviä eroja kansallisten säädösten selkeydessä, saavutettavuudessa ja tarkkuudessa. Vertailun perusteella Suomen lainsäädäntö osoittautui selkeimmäksi, yksityiskohtaisimmaksi ja helpoimmin saatavilla olevaksi. Suomen säädökset sisälsivät täsmälliset ohjeet laiva-apteekin sisällöstä, säilytyksestä, koulutusvaatimuksista ja vastuista. Maltan laiva-apteekin sääntely oli keskitasoa yksityiskohtaisuudeltaan, mutta oli sisällytettynä laajempaan MLC-säädösten kokonaisuuteen. Portugalin säädöksiin liittyi eniten haasteita dokumenttien saatavuuden ja kielen vuoksi; tarvittava tieto jouduttiin osittain hankkimaan yrityksen sisäisistä dokumenteista, sillä saatavilla olevat säädökset olivat rajallisia.

Kehittämistyönä tuotettiin Langh Shipin aluksille kolme lippukohtaista yritysmanuaalia, joihin on koottu kyseisen lippuvaltion lainsäädännön mukaiset vaatimukset ja käytännön ohjeet laiva-apteekin ylläpitoon. Manuaalien tueksi luotiin myös Excel-pohjat lääkkeiden ja lääkintätarvikkeiden inventointia ja hallintaa varten. Nämä manuaalit vastaavat selkeään tarpeeseen, sillä aiemmin ei ole ollut olemassa käytännönläheisiä ja lippukohtaisia ohjeita laiva-apteekin hoitamisee. Tutkimuksen lopuksi esitetään suosituksia jatkotutkimukselle sekä tarve painottaa aihetta enemmän merenkulun koulutuksessa käytännön näkökulmasta.

Keywords: laiva-apteekki, laiva-apteekki manuaali

CONTENTS

LIST OF ABBREVIATIONS AND TERMS

Competent authority	The minister, government department or other authority that has the legal power to make and enforce regulations, orders or instructions related a provision concerned
Deck officer	A licensed seafarer who maintain watches on the bridge at sea
Flag state	The country where a merchant vessel is chosen to be registered in and is bound to comply with its rules and regulations
ILO	International Labour Organization
ILC	International Labour Conference
IMDG	International Maritime Dangerous Goods
IMGS	International Medical Guide for Ships
IMO	International Maritime Organization
MARPOL	The International Convention for the Prevention of Pollution from Ships
Medical store	Term used for ship's pharmacy
Medicine chest	Term used for medicine and medical supply contents
MFAG	Medical First Aid Guide for Use in Accidents Involving Dangerous Goods
MLC	Maritime Labour Convention
Merchant vessel	A ship that carries passengers or cargo for hire
SOLAS	The international Convention for Safety of Life at Sea
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
WHO	World Health Organization

1 CHAPTER ONE/ INTRODUCTION

“Shipping is perhaps the most international of all the world's great industries - and one of the most dangerous” (IMO, n.d.b). For a seafarer, one of the critical aspects that makes the profession dangerous is the distance from immediate medical care and health services, which may be located hundreds or even thousands of nautical miles away. Therefore, merchant ships are required to carry onboard medical facilities, often referred as the ship’s hospital and pharmacy, that include adequate types and quantities of medicines and medical equipment to ensure that seafarers are not placed in an unequal position compared to workers ashore. Despite this, most merchant vessels do not carry a dedicated medical professional, such as a doctor or nurse, onboard. Instead, the responsibility for providing medical assistance often falls to a deck officer, who must be prepared to handle injuries, illnesses, and emergencies such as administering medication, stitching wounds, or immobilizing fractures. (ILO, 1958).

Based on my own experience, the medical training received by deck officers typically consists of a couple of intensive courses lasting a few days on medical first aid and medical care. However, these courses rarely cover practical use and maintenance of the ship’s medical store, an essential aspect of onboard medical readiness. The purpose of this thesis is to make utilizing and maintaining the ship’s medical store easier for the medical officer onboard. It also seeks to examine and compare the regulatory requirements of three flag states, Finland, Portugal, and Malta, under which Langh Ship’s fleet operates.

The primary research in this thesis consists of a qualitative document analysis of the national medical store regulations of three selected flag states, Finland, Portugal, and Malta, under which Langh Ship’s vessels operate. This comparative analysis forms the core of the research and is used to identify

commonalities and differences across the national frameworks. (Creswell, J.W., 2009, pp. 185-190; Legewie, N., 2013, paragraph 2.2.) The outcome of this work is a practical development output: three comprehensive company manuals tailored to each flag, compiling regulatory requirements and offering clear instructions for maintaining and inventorying the ship's medical stores. In addition, the development output includes a set of Excel sheets designed to support the inventory management and practical administration of the medical stores onboard, promoting traceability, standardizations, and compliance with both national and international regulations.

To support this primary research, an integrative literature review was conducted to establish a foundational understanding of relevant international regulations and national legislation. The literature review served to contextualize the findings and ensure that the development output aligns with the international and national regulatory frameworks. (Creswell, J.W., 2009, pp. 28, 64.)

2 THE BACKGROUND AND PURPOSE OF THE THESIS

2.1 The background and purpose

Deck officers are required to complete elementary and medical first aid as part of their studies, and additionally medical care, if they continue their studies to become captains (Satakunta University of Applied Sciences, n.d.). While these courses provide basic practical skills and theoretical knowledge about medicines and health care, they often do not cover the day-to-day management of medical facilities onboard. In practice, this leaves deck officers with limited skills and guidance on how to effectively maintain, utilize and inventory the medicines and medical equipment, as I have experienced.

The purpose of this thesis is to ease the medical officer's job by creating practical guide to assist in the management of medical facilities onboard. In addition, the thesis researches and compares the regulatory requirements for medical care and supplies at sea by three different flag states under which Langh Ship's vessels sail. The final product is a set of three company manuals, one for each flag state, that compile the relevant regulations and offer instructions for maintaining the ship's medical store, including inventory procedures.

2.2 Framework for research and theory

The scope of the research is to get full understanding, how legislation concerning ship's pharmacy is formed on flag states level, and for that purpose research data was collected from international organizations and their publications. An overview of conceptual framework for the research is shown in Figure 1. (Varpio, L. et al., 2020.) This framework defines the scope and structure of the research and visually explains the relationship between international regulations, national regulations and which flag state implementations were examined. The top-down flow shows how international standards set by the IMO, ILO and WHO shape national regulations.

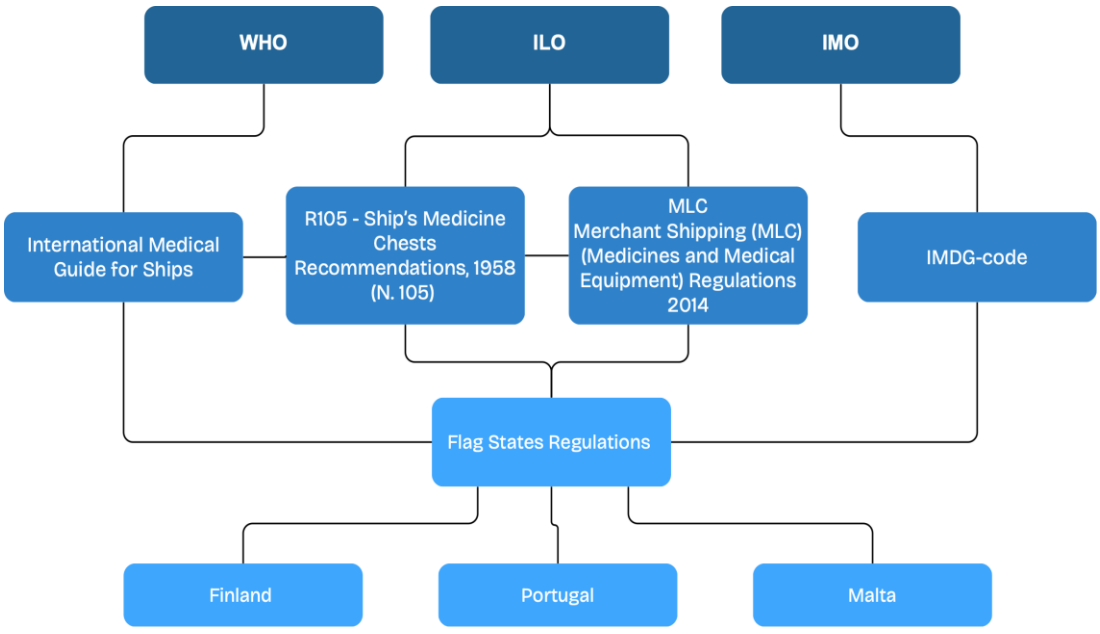

Figure 1. The conceptual framework for the research.

2.3 Research methodology

The research methodology adopted for this thesis is centered on a qualitative document analysis, which serves as the primary method to examine and evaluate the legislative framework of three selected flag states. This comparative analysis highlights both the differences and commonalities in national regulations. (Legewie, N., 2013.) The data has been collected with the aim of producing a pragmatic and practice-based output for officers responsible for medical first aid and medical care onboard. This development output aspires to enhance the usability of ship's medical store, promote standardized practices across the fleet, and support compliance with international and national health regulations at sea.

An integrative literature review was adopted to form a general view and foundational understanding of the international and national regulations relevant to ship's medical stores, thereby informing and contextualizing the document analysis. The data for knowledge base was collected from official publications of international organizations and bodies, as visualized in Figure 1, to set grounding for the research. The gathered data was used in the study as an upfront explanation of the research. (Creswell, J.W., 2009, pp. 28, 64.)

2.4 Langh Ship

Langh Ship is part of the Finnish family-owned Langh companies, including Langh Ship, Langh Tech, Langh Cargo Solutions, and Industrial and Ship Cleaning Services Hans Langh, founded by Hans Langh. The origin of the Langh companies dates back to 1973, when Hans Langh established an industrial cleaning company specializing in challenging assignments in the shipping, industrial, and construction sectors. In 1983, the company expanded into shipping with the purchase of its first vessel. Currently, Langh Ship operates a modern fleet capable of navigating challenging Northern conditions and transporting steel, bulk, and container goods. The company flies the Finnish flag on eight vessels, the Portuguese flag on two vessels, and the Maltese flag on one,

with three new container feeder vessels currently in the making. As of January 1, 2015, Laura Langh-Lagerlöf has taken over as Managing Director, while Hans Langh now serves as Chairman of the Board. (Langh Ship, n.d.a; Langh Tech, n.d.)

Langh Ship's close cooperation with the Finnish stainless steel producer Outokumpu has been a cornerstone of its operations for three decades. The partnership is built on shared values of reliability, innovation, and sustainability. Six of Langh Ship's vessels, sailing under Finnish flag, are specially equipped for transporting southbound Outokumpu's heavy stainless steel coils from Tornio, Finland, to Terneuzen, the Netherlands. The northbound return voyages carry recycled steel scrap as raw material for Outokumpu's production, ensuring balanced cargo flows. Three of these liner vessels, Laura, Marjatta, and Hjördis, which are called "the old ladies" among the crew, were built in 1996 and have been serving for almost thirty years already. Three newer vessels, Lovisa, Olivia, and Sofia, are featured with dual-fuel main engines and are initially powered by liquefied natural gas (LNG). This series of three vessels incorporates modern technology and advanced solutions for reducing emissions, making them forerunners in sustainable shipping and supporting Langh Ship's long-term goal of offering zero-emission sea transport. (Langh Ship, n.d.b.)

In addition to the general cargo vessels, Langh Ship also operates a number of container vessels. Two of them, Aila and Linda, are flying the Finnish flag, two, Christina and Edith, sail under the Portuguese flag, and Charlotta operates under the Maltese flag. To strengthen its container fleet, Langh Ship has commissioned three new container feeder vessels. The first vessel of the series, recently named Ingrid, follows the traditions of naming vessels after female family members of the shipowner family Langh, even though it has not yet entered service. (Langh Ship, n.d.b.)

3 LITERATURE REVIEW OF SHIP'S MEDICAL STORE

3.1 From a medicine chest to pharmacy

Centuries ago, medicine chest was a box or chest containing some of the therapeutic aids of the past, and it was kept onboard by the captain, physicians or paramedics. The name medicine chest has remained, although the ship's medicine chest is no longer literally a chest but rather a small pharmacy with medicines and medical equipment. (Tayebati et al., 2017, p. 40.)

A ship's pharmacy plays essential role in maritime healthcare, since ships are often sailing hours, days or weeks away from shore-based medical facilities, as it is said in *WHO International Medical Guide for Ships, IMGS* preface:

> Seafaring has always been a dangerous occupation. Long voyages, extreme weather conditions, illnesses and accidents can take a heavy toll on the health of crew members. Not only are they exposed to greater risk, seafarers are also isolated from the usual sources of medical care and assistance available to people on shore. (2007, p. xv.)

The diagnosis and treatment of illness and injury at sea is challenging in the maritime industry. On most merchant vessels, where no doctors are onboard, the responsibility of providing medical care typically is hold by a non-medical crew member. This individual must rely on limited medical training, written protocols, and, when possible, shore-based radio-medical or telemedical consultations. The effectiveness of such care is dependent on the appropriate information, and the quality, uniformity and adequacy of the medicine chest and equipment. (Schlaich et al., 2009.) The most effective approach to the issue is to commence global efforts toward standardizing the contents of the ship's pharmacy as much as possible (Tayebati et al., 2017).

For that reason the maritime field is, as it should, a highly regulated sector and it is done by international organizations like International Maritime Organization, IMO, which gives the standards for safer shipping (IMO, n.d.a). In addition to ships and their crews' safety, there are standards as well for the well-being

and health of the crew onboard, which are given by International Labor Organization, ILO, and World Health Organization, WHO. These two organizations moreover ensure medical care and health protection is as comparable as possible to workers' healthcare ashore (WHO, 2007, p. xv). In the present day these three organizations' conventions and codes together distribute standards and recommendations for ships' pharmacies and hospitals, on the basis of which individual flag states form their own legislation concerning them (IMO, n.d.c; Tayebati et al., 2017).

3.2 ILO – International Labour Organization

The International Labour Organization, ILO promotes decent work and advances social justice. It operates through tripartism and social dialogue that brings together workers, employers, and governments from its 187 member states. By working together, they create and monitor international labour standards, and address labour issues. (ILO, n.d.a.) The ILO is comprised of three governance organs: the International Labour Conference, ILC, the Governing Body, which functions as the executive body of the ILO, and the International Labour Office, referred as "the Office", which operates as the permanent Secretariat of the ILO (ILO, 2023a).

The International Labour Conference, ILC according to Article 2 of the ILO Constitution, serves as the supreme decision-making and deliberative body of the ILO (ILO, 2023b). The Governing body implements and makes operational decisions of the Conference and supervises and provides guidance for the work of the Office. The Office's task is the implementation of the programmes and policies adopted by the ILO governance organs. (ILO, 2023a.) The Conference annually brings together tripartite delegations to consider the world of work related topics. One of the main functions of these annual meetings is crafting and adoption the international labour standards, Conventions and Recommendations. (ILO, 2023b.)

3.2.1 MLC – Maritime Labour Convention

At a special International Labour Conference, that was held in February 2006, the Maritime Labour Convention, 2006 was adopted by representatives of governments, employers and workers (ILO, n.d.c). It established international standards for seafarers' working and living conditions, by revising and consolidating 37 existing Conventions and related Recommendations (ILO, n.d.b). Widely referred as the 'seafarers' bill of rights', the Convention consolidates in one place their rights to decent conditions of work, covering areas such as minimum age, hours of work or rest, and onboard medical care, among others. Designed for global applicability, and uniform enforcement, the MLC, 2006 serves as the fourth pillar of quality shipping, alongside the IMO's SOLAS, STCW and MARPOL. (ILO, n.d.c.)

Building on this foundation, it was determined that the MLC, 2006 should be designed in a manner that ensures the widest possible acceptability among governments, shipowners and seafarers dedicated to upholding the principles of decent work. To remain relevant in a rapidly evolving maritime industry, it also should be easy to understand and readily updatable to support effective implementation and enforcement. Among its core principles, Article IV, paragraph 4 affirms that "every seafarer has a right to health protection, medical care, welfare measures and other forms of social protection," (ILO, 2013, Preamble, Title 4) underlining the Convention's commitment to ensure seafarers access to medical care onboard and ashore, and that is as comparable as possible to health care generally available to workers ashore. (ILO, 2013, Preamble, Title 4.)

As stated in Article IV, paragraph 4, seafarers have the right to health protection, medical care and welfare, and to uphold this right, the Convention requires each Member State to implement national laws ensuring adequate onboard hospital and medical care facilities, medical equipment and training on ships flying its flag. National laws and regulations shall include the following, as a minimum:

(a) all ships shall carry a medicine chest, medical equipment and a medical guide, which shall meet approved standards and be regularly inspected by the competent authority; the national requirements shall be based on the ship type, crew size, voyage duration and destination;
(b) ships carrying 100 or more persons on international voyages longer than three days shall have a qualified medical doctor onboard; national laws or regulations shall also define when smaller ships require a medical doctor, based on similar criteria as on paragraph (a);
(c) ships without a medical doctor onboard shall have at least one crew member trained in medical care or medical first aid, in accordance with the STCW Convention, and is in charge of medical care and administering medicine or competent to provide medical first aid; the national requirements shall specify the level of required training depending on the ship's voyage and crew size; and
(d) a 24-hour medical advice system via radio or satellite shall be prearranged by the competent authority to ships at sea, including specialist support, and provided free of charge to all ships regardless of the ship's flag. (ILO, 2013, Standard A4.1.)

In addition to establishing minimum requirements for onboard medical care, the MLC, 2006 also emphasizes the proper maintenance and inspection of the medicine chest and its contents, medical equipment, and medical guide carried onboard, the inspection interval shall not exceed a 12-month period and shall be executed by persons designated by the competent authority. These inspections are intended to ensure that all medicines are correctly labelled, within their expiry dates, include directions for their use, functioning of medical equipment as required, and medicines are stored under appropriate conditions. Furthermore, the competent authority should take into account current international standards and recommendations when determining the appropriate contents of medicine chest and medical equipment and in selecting and updating the ship's medical guide used nationally. In particular, reference should be made to the latest edition of the IMGS, along with other relevant medical guide publications. (ILO, 2013, Guideline B4.1.)

3.2.2 R105 – Ship's Medicine Chest Recommendation, 1958 (No. 105)

One of the earlier Recommendations that contributed to the consolidation of the MLC, 2006 was the Ships' Medicine Chests Recommendation, 1958. This Recommendation was adopted by the General Conference of the ILO in April 1958. It introduced proposals regarding the contents and management of medicine chests, and it was agreed that these proposals would take the form of a Recommendation. (ILO, 1958.)

Since the adoption of this Recommendation in 1958, the field of medicine has advanced significantly, hence, the minimum list of medicaments has undergone a notable update. Nonetheless, the main principles and objectives have been incorporated into the MLC, 2006 as binding requirements. These principles include the obligation to carry and maintain an adequate medicine chest, the requirement for regular inspection at intervals not exceeding 12 months, the use of standardized medical guides, and the recommendation for flag states to implement their own national regulations. (ILO, 1958; ILO, 2013, Title 4.) As these objectives were outlined in paragraph 3.2.1 of this thesis.

3.3 WHO – World Health Organization

The World Health Organization, WHO the agency of United Nations that was established in 1948, connects nations, partners and people to promote global health and coordinate international responses to health challenges. Dedicated to achieving health and security for all, the WHO works collaboratively with governments, civil societies, and international organizations to expand access to health care and improve health systems worldwide. Through its collaboration with the IMO and the ILO, the WHO contributes the global framework for maritime health. (Nittari et al., 2019; WHO, n.d.)

3.3.1 IMGS – International Medical Guide for Ships

The first global attempt to standardize the ship's pharmacy was initiated by the WHO, which published, in collaboration with the ILO, the first edition of the International Medical Guide for Ships, IMGS in 1967. In this publication, the WHO gave recommendations for a minimum requirement of medicinal products and medication items that had to be carried and maintained on all ships operating in international waters. (Nittari et al., 2019; Tayebati et al., 2017.) It also provided practical guidance for seafarers when they fell ill or got injured and acted as the standard source of such guidance (WHO, 2007, p. xv.)

The second edition of the guide was updated and written in 1988, followed by the third and latest version in 2007. While each edition outlines the minimum requirements of medicinal products, none of them specify quantities of medications to be carried. Consequently, the responsibility for determining the types and quantities of medications remains with the individual flag states through their national regulations. Nevertheless, it is generally assumed that ships should adhere to the recommendations provided by the IMGS, in the absence of national regulations. (Schlaich et al., 2009; Tayebati et al., 2017.)

Despite these efforts, both the WHO Collaborating Centers for the Health of Seafarers and the International Maritime Health Association acknowledged that improvements are still needed in several areas (Schlaich et al., 2009). As stated in the preface of the latest edition of IMGS "By carrying this guide on board ships, and following its instructions, countries can both fulfil their obligations under the terms of the MLC, 2006, and ensure the best possible health outcomes for their seafaring population" (2007, p. xv).

3.4 IMO – International Maritime Organization

As the specialized United Nations agency responsible for regulating international shipping, the International Maritime Organization, IMO plays an important role in establishing a universally adopted and implemented, fair and effective regulatory framework for safety, security, and environmental

performance at sea. This approach of global standard-setting is essential for ensuring that cost-saving measures do not come at the expense of the health and safety of seafarers. Given the international nature of the shipping industry, such regulations must be internationally adopted and implemented to maintain a level playing-field across the industry. (IMO, n.d.a.)

3.4.1 IMDG Code and MFAG

The International Maritime Dangerous Goods, IMDG Code, developed to enhance and harmonize the global practices for transporting dangerous goods by sea, prescribes detailed requirements for packing, stowage, and segregation to prevent accidents and environmental pollution (IMO, n.d.d). Although efforts are made to prevent accidents, they might still happen. The IMO, in collaboration with the WHO and the ILO, provides medical guidance through the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods, MFAG to support medical preparedness in incidents involving hazardous goods (IMO, n.d.c).

The MFAG offers standardized first aid instructions, specific additional medicine and antidotes, and special equipment for the ships transporting dangerous goods. It is designed for use in association with the IMDG Code and the chemicals supplement to the IMGS and was adopted by the IMO's Maritime Safety Committee in May 1998. Together with the IMGS, the MFAG ensures that seafarers have access to essential medical knowledge and supplements for delivering high-quality medical care at sea. (IMO, n.d.c; Nittari et al., 2019; WHO, 2007.)

3.5 EU-Directive 92/29/EEC

In addition, between international and national regulations the European Union (EU) Member States have regional regulations and directives to be implemented. The EU has issued recommendations in the Directive 92/29/EEC of

Council of 31 March 1992 on the minimum safety and health requirements for improved medical treatment onboard vessels to harmonize the national regulations regarding onboard medical care and contents of medicine chests. (Nittari et al., 2019.)

These recommendations require Member States to ensure that all vessels flying their flag or registered under their jurisdiction carry medicines and medical supplies that meet at least the minimum quality standards specified in Annex II, appropriate to the vessel's category. The quantity and type of these supplies are to be determined by the national regulations that should take into account factors such as voyage duration, destination, type of cargo, and crew size. In addition, vessels must maintain a detailed checklist in line with the form in Annex IV to ensure compliance and auditability. (Council Directive 92/29/EEC of 31 March 1992 on the Minimum Safety and Health Requirements for Improved Medical Treatment on Board Vessels, 2019.)

These EU-level mandates not only ensure a consistent implementation of international health and safety recommendations but also support to reduce the differences of delivering high-quality medical care to seafarers across European waters (Nittari et al., 2019).

4 DOCUMENT ANALYSIS OF FLAG STATE LEGISLATION

4.1 Document analysis

The literature review was adopted to form a general view and foundational understanding of the international and national regulations relevant to ship's medical stores, thereby informing and contextualizing the document analysis. A qualitative document analysis was conducted to examine and evaluate the legislative frameworks of three selected flag states: Finland, Portugal and Malta. (Creswell, J.W., 2009, p. 185.) These countries were specifically chosen

because Langh Ship operates a number of vessels under their flags, making their national regulations directly relevant to the company's fleet management and compliance needs.

The document analysis focused on key regulatory elements related to ship's medical stores, including the required quality and quantity of medical supplies, the use and structure of inventory lists, mandatory contents for lifeboat and MFAG medicine chests, and provisions for onboard medical facilities and personnels training. A qualitative comparative analysis approach was employed to systematically identify both commonalities and differences across the flag states' regulations using a consistent analytical framework, shown in Figure 2. This method provided a structured means of handling legislative data, ensuring coherence in the findings. The data was gathered with the goal of producing a practical output for officers responsible for medical care and medical first aid onboard. The consistent use of qualitative comparative analysis contributes to the validity, reliability and practical applicability of the research. (Creswell, J.W., 2009, pp. 185-190; Legewie, N., 2013, paragraph 2.2.)

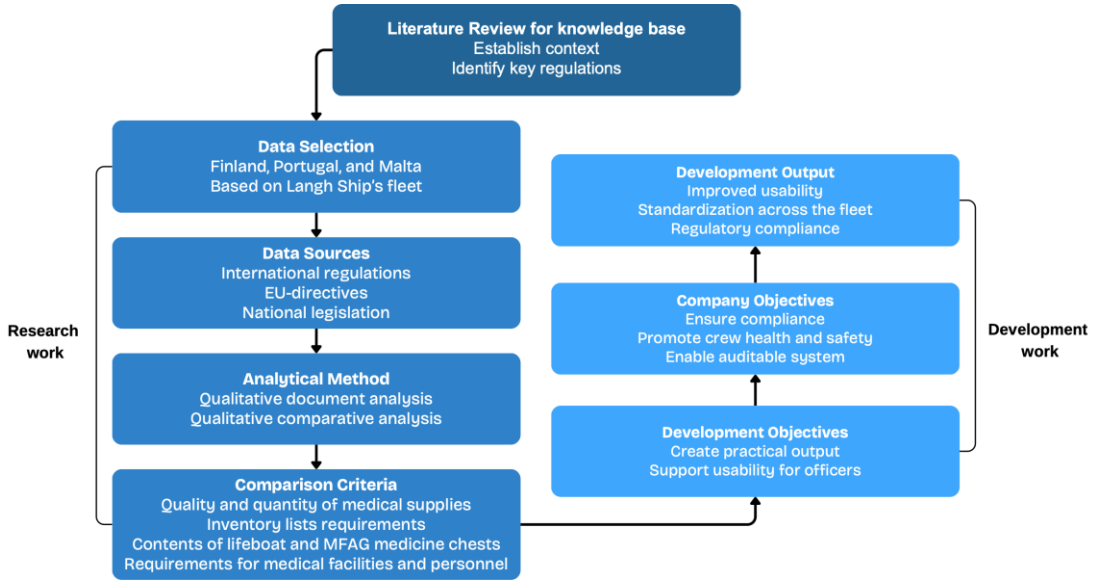

Figure 2. The qualitative data analysis framework for research and development output.

This research also supports the development process of the Langh Ship's medical store manual, which aims to ensure compliance with the international and national regulations, promote crew health and safety through structured medical inventory management, and establishing a traceable and auditable

system for the storage and dispensing of medicines, including controlled substances.

4.2 Finnish

The research into the Finnish flag state's medical store regulations disclosed a clear and accessible legislative framework. The relevant documentation, the Act on Ship's Medical Stores and the Decree of the Ministry of Social Affairs and Health on Ship's Medical Stores, was available in English and the easiest to locate among the three flag states reviewed.

The Decree on Ship's Medical Stores provided detailed specifications regarding both the quality and quantity of medicines for medicine chest, MFAG, first aid kit, and lifeboat and liferafts provisions. Notably, the contents of the medicine chest were listed with comprehensive information, including the indication of use, dosage details, package sizes, and clearly labelled requirements for quality and quantity, shown in Figure 3. Applicable standards and provisions for onboard medical facilities were also thoroughly outlined on the Decree. It additionally specified the training requirements for managing medical stores, the mandatory guidebooks to be carried, the requirements for proper storage conditions according to vessel and voyage types, and the obligation to maintain a medical journal. (Decree of the Ministry of Social Affairs and Health on Ships' Medical Stores, 2021.)

Annex 1

DRUGS AND MEDICAL SUPPLIES

1. MEDICINAL PRODUCTS FOR THE CARDIOVASCULAR SYSTEM

		VESSEL CATEGORY			
DRUG, INDICATION AND DOSAGE	**QUANTITY**	**A**	**B**	**C**	**D**
* **Isosorbide dinitrate** 5 mg tabl. *Alternatively:* * Isosorbide dinitrate 1.25 mg/dose spray into the oral cavity. Indication: Treatment of angina pectoris. DOSAGE: Tabl: 1–2 tablets are chewed and held in mouth to absorb through the lining of the mouth. Spray: Spray 1–3 times onto the tongue. Allow at least 30 seconds between sprays and hold breath while spraying. Keep from freezing.	100 tablets or 20 ml	1	1	1	1
* **Acetylsalicylic acid** 100 mg tabl. Indication: To reduce the risk of blood clots inthe treatment of angina pectoris, used with nitrate. DOSAGE: 3 tablets chewed immediately, followed by 1 tablet swallowed whole once aday. N.B. Not suitable for persons who are hypersensitive to salicylates or other anti-inflammatoryagents.	100 tablets	1	1	1	1

Figure 3. Picture taken from the Decree of the Ministry of Social Affairs and Health on Ship's Medical Stores (589/2015; amendments up to 811/2021 included), Annex 1.

Furthermore, the Act on Ship's Medical Stores defined the categories of vessels, the purpose, use, and inspection of medical stores, and established the responsibilities for the management of medical stores (Act on Ships' Medical Stores No. 584/2015, 2015). All of this information was systematically organized and easy to interpret, reflecting regulatory clarity and alignment with international maritime health standards.

4.3 Portuguese

The research into the Portuguese flag state's medical store regulations proved to be the most challenging of the three. Official documentation was difficult to locate, particularly in English, and no complete set of legislative texts detailing medical store requirements was readily accessible. The only English-language document found was the Declaration on Maritime Labour Compliance, which lacked the level of specificity seen in the Finnish and Maltese frameworks. It included a general statement "The minimum requirements of Regulation 4.1 and Standard 4.1 of the Maritime Labour Convention, 2006, are applied to

ships flying the Portuguese flag in all cases where the national legislation is omitted," which limited its usefulness for detailed analysis. (Government of Portuguese Republic, n.d.)

The relevant legislation, such as Portaria n.° 214-A/2021, which contained listing of medicines and medical supplies without indicating qualities or quantities, as shown in Figure 4, and Decreto-Lei n.° 274/95, which set out minimum health and safety requirements to promote better medical care onboard, was available only in Portuguese (Decreto-Lei n.º 274/95, 1995; Portaria n.º 214-A/2021, 2021). Based on a Google Translate review, these documents appear relevant but could not be fully verified or used reliably due to language limitations.

Dotação médica (lista não exaustiva)

I — Medicamentos

	Categorias de navios		
	A	B	C
1 — Cardiovasculares:			
a) Simpaticomiméticos cardiocirculatórios	x	x	
b) Antianginosos	x	x	x

Figure 4. Picture taken from Portaria n.° 214-A/2021, Anexo I.

Key qualitative and quantitative data for the development output was accessed through the Marine Superintendent of Langh Ship, who provided the latest medicine chest inventory from one of the company's Portuguese-flagged vessels. As it was stated on the inventory list, the Merchant Shipping Notice 1768 served as the regulatory basis for that particular vessel's medical store. However, due to the language barrier and limited public access to supporting legislation, the overall framework could not be fully verified. As a result, the Portuguese regulations appeared less transparent and less detailed than both the Finnish and Maltese frameworks, complicating consistent compliance and comparative analysis.

4.4 Maltese

The research into the Maltese flag state's medical store regulations was centered on the Merchant Shipping (Maritime Labour Convention) Rules, which serve as the primary legislative framework for ship's medical stores and could be found in English (Merchant Shipping (Maritime Labour Convention) Rules S.L.234.51, 2013). Compared to the Finnish regulations, the Maltese rules were somewhat more complex to locate and interpret, particularly regarding the quality and quantity specifications for medicines and medical supplies. These details were found in subsidiary legislation, but they were not defined as precisely or clearly as in the Finnish medicine listing, for example, there were no indications of package sizes, as shown in Figure 5.

MERCHANT SHIPPING
(MARITIME LABOUR CONVENTION) [**S.234.51** 79

FIFTH SCHEDULE

(Rules 97, 98, 99, 100, 101 and 103)

Part I - Medicines	Categories of ships		
	A	B	C
1. CARDIOVASCULAR			
(*a*) Cardio-circulatory analeptics – Sympathomimetics			
Adrenalin, lin 1000. 0,5 ml or less	10	5	5
(*b*) Anti-angina preparations			
Dinitrate of isosorbide 20mg tablets (Cedocard retard)	60	60	60
Nifedipine 30 mg tablets (Adalat)	50	50	-

Figure 5. Picture taken from the Merchant Shipping (MLC) Rules S.L.234.51, Fifth Schedule.

Nevertheless, the Maltese regulations provided a broad and structured outline. They define vessel categories, required guidebooks, inspection protocols, and specify the required contents for the medicine chest, MFAG, and lifeboat supplies. They also establish requirements for proper storage conditions and detailed provisions on the packaging and labelling of medicines to ensure the

safe preservation of supplies. In addition, the rules outline responsibilities and training requirements for managing the medical store. (Merchant Shipping (Maritime Labour Convention) Rules S.L.234.51, 2013, Rules 93, 97-106.) While less detailed than the Finnish legislation, but notably more specific than the Portuguese regulations, the Maltese framework still reflects alignment with international maritime health standards.

4.5 Commonalities and differences

The comparative analysis of the Finnish, Portuguese, and Maltese flag states revealed both common regulatory foundations and notable differences in the way medical stores are regulated onboard merchant vessels. A key commonality across all three flag states is their alignment with international regulations, particularly the MLC, 2006, which establishes minimum requirements for medical care at sea. Each country mandates the presence of appropriate medicine chest and MFAG antidotes, as well as responsibilities of managing medical store and training requirements. However, the level of clarity, accessibility, and detail in national regulations varies significantly, as visualized in Figure 6.

Comparative Analysis of Medical Store Regulations			
Criteria	**Finland**	**Portugal**	**Malta**
International Convention Alignment	Yes - aligned with the MLC, 2006	Yes - aligned with the MLC, 2006	Yes - aligned with the MLC, 2006
Availability of Legislation in English	Fully available in English	Very limitedly; most legislation only available in Portuguese	Fully available in English
Clarity of Regulations	Very clear and systematically structured; found in a designated Act and Decree specifically focused on ship's medical stores	Fragmented and unclear; at least four documents identified (via Google Translate), but only one (Declaration of Maritime Labour Compliance) was in English	Moderately clear; found in one consolidated document (Merchant Shipping MLC Rules), but medical store content is only a part of broader MLC regulations
Training Requirements Stated	Medical care training required for both the master and the medical store manager	At least one seafarer onboard must be qualified either in medical care or at least competent to provide medical first aid; stated in the document in English	Periodically updated training, at least every five years, with specific content outlined required for both the master and the medical store manager
Management and Inspection Responsibilities	Management and annual inspection are the master's responsibility, may delegate the tasks to a deck officer	Management and monthly inspection are the master's responsibility; stated in the document in English	Management is the master's responsibility and annual inspection is the shipowner's responsibility
Conditions of Storage	Very specific and detailed; includes specification on requirements like a refrigerator on certain vessel categories	Not found in English; Google-translated content lacks reliability and specificity	Detailed, but not as specific as Finnish; general guidance on proper storage is included
Challenges in the Research	None - comprehensive and easy to use	Many - language barrier, lack of centralized information, reliance on company inventory fo verification	Some - requires interpretation and lacks some specific details

Figure 6. Comparative analysis of medical store regulations.

Finnish regulations were found to be the most comprehensive and accessible, with clear documentation available in English, dedicated legislation for medical stores, and precise definitions for storage conditions and training requirements. Malta offers a moderately detailed framework, with regulations consolidated under its broader MLC implementation. While many requirements are detailed, specifics such as the requirement for a refrigerator must be interpreted from general language like “shall be stored in accordance with any instructions on the medicine container.” Portugal presents the greatest challenges, primarily due to limited English documentation and fragmented legislative references. Due to uncertainty of Google Translate, only the document available in English was used for comparison, and the regulations and requirements in it were limited and lacking in detail. Hence, Figure 6. highlights variations in training requirements, clarity of regulations, and storage conditions, all which affect the practical management of ship’s medical store.

It is important to note that this research does not evaluate the clinical or pharmacological appropriateness of the medicine chest contents, as the researcher is not a healthcare student or professional. Instead, the focus has been on the broader legislative perspective governing the contents and management of ship’s pharmacies, as shown in Figure 7.

Comparative Analysis of Medical Store Contents and Documentation Requirements			
Criteria	**Finland**	**Portugal**	**Malta**
Detail Level of Medical Store Listings	High - includes types, indications of use and dosage, packing sizes, and required quantities	Low - no complete listing found publicly availabel or in English; indirect reference from company's documentation	Moderate - contents listed with qualities and quantities, but without packing sizes
First aid Kit	Dedicated first aid kit with resuscitation equipment and supplies for medical emergencies	Basic kit primarily containing bandages and dressings (based on MSN 1768)	Basic kit primarily containing bandages and dressings (based on MSN 1768)
Lifeboat Supplies	Separate and clearly defined list for lifeboat medical supplies	Lifeboat supplies defined under vessel category C	Lifeboat supplies defined under vessel category C
Requirements for record keeping	Explicit requirement to keep a medical journal; all dispenses, disposes, and acquisitions of medicines shall be entered	No specific requirement found in English	No specific requirement found
Inventory lists	No models, but specification on requirements	Models for inventory lists	No models
Guidebooks required	Medical guide in accordance with the medicines, MFAG guide, guidebook for pharmaceutical products (vessel categories A and B), IMO International code of Signals, and language and format (printed/electronic) also specified	A guide indicating the use of the medicines and medical equipment	Ship Captain's Medical Guide and MFAG guide
Specification level	Highly detailed - inlcudes a separete lists of medicinens and medical supplies and requirements are detailed and specified	Least detailed - minimal information available in English and lacks specific details	Moderately detailed - provides medicine lists and guidance, but not as spesific and detailed as Finnish

Figure 7. Comparative analysis of medical store contents and documentation requirements.

The comparison of medical store contents and documentation requirements among the three selected flags revealed notable variations in detail, structure, and accessibility. Finland demonstrates the most comprehensive and well-structured regulatory approach, with precise definitions for medicine quantities and package sizes and separate listings for items such as first aid kits and lifeboat supplies. In addition, documentation obligations like keeping a medical journal and specific requirements for guidebooks to different vessel categories were clearly defined. In contrast, Malta provides a moderately detailed framework, while it includes essential elements like medicine quantities and requirements for lifeboat supplies, it lacks precise specifications on package sizes and keeping a record of dispensed or disposed medicines. Portugal, meanwhile, offers the least detailed and most difficult to access to information, with limited guidance available in English and a reliance on general references to international standards.

This qualitative comparative analysis underlines the importance of harmonized and transparent regulatory approaches to ensure that seafarers across different jurisdictions receive equitable standards of health protection and care at sea. Hence, the Finnish model stands out for its clarity and practicality, supporting a higher standard of onboard medical preparedness and compliance.

5 DEVELOPMENT OUTPUT

Prior to this research, no consolidated manuals existed within the company to guide officers in maintaining and managing the ship’s medical stores in alignment with the flag state regulations. To address this gap, a practical development output was created: three tailored company manuals and Excel templates, one for each flag under which Langh Ships vessels operate. These manuals compile the relevant legal requirements into clear guidance and are supplemented with structured Excel templates designed to assist with management, inventory control, and standardized recordkeeping.

The aim was to support officers responsible of medical store management by simplifying regulatory complexity and improving day-today-day usability of the ship's pharmacy. While this chapter presents selected parts of the manuals, the full content will not be made public, as it forms part of the company's safety and quality management system. The Excel templates for one flag can be found in its entirety in Appendix 1, as an example of the work.

Company SQMM

Ship's Medical Store Manual

Contents ***Page***

Figure 8. Table of contents of the company manual, picture taken from the company manual for the Finnish flag.

2.2. The ship's master

- Has overall responsibility for the management and control of onboard medical stores and medical care.
- Ensures that the vessel has appropriate medicines in medical store and decides whether it should carry more medicines and medical supplies in number or other qualities than what is required.
- Ensures all controlled medicines are recorded, monitored, and documented in accordance with narcotics legislation.
- Ensures that medical guides are accessible and up to date.
- Ensures that the ship's lifeboats and liferafts are equipped with the appropriate medicines and medical supplies.
- Ensures that ship's medical stores are inspected annually by a licenced pharmacist.
- Shall request telemedical advice (TMAS) when situation requiring it. The TMAS doctor is responsible for diagnosis and prescription of treatment, while the Master remains responsible for examination of patient, administering treatment and final decision.
- May delegate the tasks to be performed by the medical officer.

Figure 9. Responsibilities of the master, picture taken from the company manual for the Finnish flag.

3. Requirements for ship's medical store

3.1. Contents of the ship's medical store

- The ship's medical store must carry a sufficient quantity of medicines and medical supplies determined by the vessel category and the number of crew members, first aid kit, medical journal and medical guides.
- Vessels carrying dangerous goods must carry medicines and medical supplies required by MFAG. Medicines and medical equipment already available in the ship's medicine chest are counted towards the required amounts in the MFAG and they should be stored together.

Figure 10. Requirements for the contents of the ship's medical store, picture taken from the company manual for the Finnish flag.

3.5. Medical journal

- Medical journal must be kept up to date by the relevant persons regarding the operations of the medical store.
- Must have listing of all acquisitions and removals of medicines and medical supplies to and from the medical store.
- All medicines dispensed from the medical store shall be entered, and the name of the recipient, the date, the reason why and the type and quantity of the medicine administered, and the name of the person who dispensed the medicine must be shown in the entry.
- All performed medical procedures shall be entered, and include the name of the patient, a report of the procedure and possible instructions from a doctor and the name of the doctor, care instructions, the time of the procedure, and the name of the person performing the procedure.
- Entries shall be made in the working language of the ship and must remain unchanged and intact.
- All parts of the medical journal must be kept for at least five years after the last entry.
- May be kept either in printed or electronic form.

Figure 11. Requirements of the medical journal, picture taken from the company manual for the Finnish flag.

Figure 8. presents the table of contents, providing an overview of the manual's structure and sections. Figure 9. outlines the responsibilities of the ship's master, reflecting compliance with regulatory duties related to medical store management. Figure 10. shows an excerpt detailing the required contents of the ship's medical store, aligned with flag states requirements. Figure 11. displays the requirements for keeping the ship's medical journal, designed to ensure proper documentation of medical treatments and medicine recordkeeping.

These particular pictures were selected because they highlight regulatory aspects in the Finnish framework that differ from the Maltese and Portuguese counterparts, such as clearly assigned responsibilities and mandatory recordkeeping practices. These visual excerpts support the practical implementation of the manuals; however, the full manuals themselves are not published in this thesis.

6 CONCLUSION AND SUMMARY

6.1 Conclusion

This research set out to analyse and compare the regulatory frameworks governing ship's medical stores under the Finnish, Portuguese, and Maltese flags, with the aim of developing practical tools and manuals to support deck officers responsible for onboard medical care. The study revealed significant variations in the clarity, accessibility, and level of detail in national legislations, despite all three flag states aligning with the Maritime Labour Convention, 2006. Finnish regulations emerged as the most comprehensive and accessible, offering clear documentation in English and detailed requirements of medicine chests contents, management responsibilities, and storage conditions. Maltese regulations were moderately detailed and interpretable, while Portuguese legislation presented the most challenges due to limited English resources and fragmented legal references.

The development output, consisting of three company manuals and Excel templates for inventory management, responds directly to these regulatory differences, translating complex legal requirements into practical and usable tools. By focusing on legislation rather than medical content, the research and development output remains grounded in a maritime operational context, suitable for deck officers without a healthcare background. The comparative findings emphasize the importance of harmonized, clearly presented regulations, and the need for practical guidance onboard to ensure consistent standards of health and medical care for seafarers.

The development output is going to be implemented as part of Langh Ship's safety and quality management system. It will be used in its current form to support officers responsible of medical care. The manuals and Excel templates are designed to be practical and adaptable, allowing for future updates in response to changes in legislation, company procedures, or operational needs.

6.2 Ethical considerations, validity and reliability

This research maintained ethical standards and ensured the validity and reliability of its findings by relying solely on publicly available and authoritative sources. The research was grounded in the literature review and document analysis of international maritime publications and the regulatory frameworks of three flag states. These sources were considered valid and credible due to the institutional authority of the organizations that produce them, such as international regulatory bodies and national maritime administrations. In addition, the research may be considered reliable due to the consistency of using the same methodological approach throughout the research, which supported coherence and comparability across the findings. (Creswell, J.W., 2009, p. 190.)

As the study is conducted for a shipping company, it is essential to be noted that no confidential or proprietary information were disclosed. Only parts of

company manuals have been presented, as they will be part of the company's safety and quality management system and therefore not public. Furthermore, no personal interviews were conducted, hence no individuals can be identified or linked to the research.

6.3 Further research

While this thesis provides a comparative analysis and practical tools for managing ship's medical stores under three flag states, it also reveals areas that may need further investigation. Further research could explore the effectiveness of these national regulatory frameworks in practice, including how well onboard medical stores are managed across fleets and how officers perceive their preparedness to manage medical care responsibilities.

Additionally, this study also suggests to a gap in the education of this topic. The management of the ship's medical store is rarely emphasized in maritime education beyond medical first aid and medical care training. Integrating this topic into deck officer curricular from a practical, regulatory, and operational perspective would better equip future officers for their responsibilities and contribute to safer working conditions for all seafarers.

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APPENDIX 1:

The Excel templates for Finnish flag, vessel category A, can be found in its entirety in this Appendix 1, as an example of the work.

Langh Ship

Medicine chest - Vessel Category A, *vessels operating beyond limitations of 150 nm of a medically equipped EU or Norwegian port, or up to 175 nm if they are always reachable by rescue helicopter*

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
Medicines								
1.	**Medicinal products for the cardiovascular system**							
	Isosorbide dinitrate 5 mg tab	Nitrosid 5 mg	tbl	100 tbl				ok
	Acetylsalicylic acid 100 mg	Primaspan 100 mg	tbl	100 tbl				order
	Clopidogrel 75 mg	Clopidogrel orion 75mg	tbl	30 tbl				ordered
	Furosemide 40 mg	Furesis 40 mg	tbl	30 tbl				
	Furosemide 10 mg/ml	Fureosemide Fresenius 10mg/ml	inj	10x 2ml (MFAG 25x)				
	Bisoprolol 5 mg	Bisoprolol ratiopharm 5mg	tbl	30 tbl				
2.	**Drugs for digestive and intestinal diseases**							
	Antacid to protect stomach lining (e.g. calcium carbonate)	Gaviscon	btl	500ml or smallest pkg				
	Proton pump inhibitor (Omeprazole 20 mg)	Omeprazd ratiopharm 20mg	tbl	3x 30 tbl				
	Metoclopramide 10 mg	MetoclopramideOrion	tbl	2x 40 tbl				
	Metoclopramide 5mg/mg	Primperan 5 mg/ml	inj	2x (12x 2ml) (MFAG 3x)				
	Natrium citrate	Microlax	supp	4x 5ml				
	Stimulant laxative (Bisacodyl 5 mg)	Toilax 5mg	tbl	25 tbl				
	Loperamide 2 mg	Imodium 2 mg	tbl	4x 16 tbl				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Prednisolone-cinchocaine hydrochloride	Scheriproct Neo	supp	2x 10 pcs			Store refigerated	
	Prednisolone-cinchocaine hydrochloride	Scheriproct Neo	cream	2x 10g				
3.	**Pain and fever medication**							
	Ibuprofen 400 mg	Ibuxin/Ibumax 400mg	tbl	100 tbl				
	Paracetamol 500 mg	Para-Tabs 500mg	tbl	30 tbl (MFAG 2x 100tbl)				
	Diclofenac 25 mg/ml	Voltaren	inj	5x 3ml				
	Diclofenac 100 mg	Voltaren	supp	5 pcs				
	Oxycodone 10 mg/ml	OxyNorm	inj	2x (5x 1ml) (MFAG 8x)			Store in narcotic locker	
Extra	E.g. Sore Throat	E.g. Strepsils	tbl				Example of extra column	
4.	**Drug that influence the central nervous system (Narcotic locker)**							
	Diazepam 5 mg	Diapam 5 mg	tbl	30 tbl			Store in narcotic locker	
	Haloperidol 5 mg/ml	Serenase 5mg/ml	inj	5x 1ml			Store in narcotic locker	
	Midazolam 5 mg/ml	Midazolam accord 5mg/ml	inj	10x 3ml			Store in narcotic locker	
	Temazepam 10 mg	Tenox 10mg	tbl	30 tbl			Store in narcotic locker	
	Meclizine 25mg tbl or equivalent	Postafen 25mg	tbl	3x 10 tbl				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
5.	**Anti-allergic agents**							
	Desloratadine 5 mg	Desloratadine Actavis 5mg	tbl	30tbl				
	Hydrocortisone 125 mg/ml (e.g. Solu-Cortef)	Solu-cortef 250 mg	inj (250mg = 2ml)	3x 250mg				
	Prednisolone 5 mg	Prednisolon 5 mg	tbl	100 tbl				
6.	**Drugs for respiratory tract diseases and lung diseases**							
	Albuterol 200 µg/dos	Ventoline Diskus	60 dos	1				
	Fluticasone 250 µg/dos	Flixotide Diskus	60 dos	1				
	Dextromethorphan 3 mg/ml	Resilar 3mg/ml / Sir Ephedrin	btl	2x 150-200ml				
	Xylometazoline nasal spray 1 mg/ml	Nasolin	spray	2x 10ml				
7.	**Infection drugs, Antimicrobial products**							
	Amoxicillin 500 mg	Amorion 500 mg	tbl	3x 20 tbl				
	Doxycycline 100 mg	Doximed 100 mg	tbl	3x 10 tbl				
	Cephalexin 500 mg	Kefexin 500 mg	tbl	2x 30 tbl				
	Ceftriaxone 1 g inj. inf. powder	Ceftriaxone Kalceks	inj/powder	10x 1g				
	Valaciclovir 500 mg		tbl	42 tbl				
	Trimethoprim 160 mg	Trimetin	tbl	2x 10 tbl				
	Ciprofloxacin 500 mg	Ciproxin 500mg	tbl	2x 20 tbl				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Metronidazole 400 mg	Trikozol 400mg	tbl	30 tbl				
	Atovaquone / Proguanil 250 mg / 100 mg	Antimalarial medication in accordance with WHO instructions*		*			If sailing in suspected malaria area	
	Doxycycline 100 mg	Alternative drug for malaria treatment		*			If sailing in suspected malaria area	
8.	**Drugs used in resuscitation and treatment of poisoning**							
	Epinephrine 1 mg/ml	Adrenalin 1 mg/ml	inj	10x 1ml				
	Rapid-acting insulin	NovoRapid FlexPen	inj	5x 3ml				
	Glucagon 1 mg inj. powder and solvent	GlucaGen 1mg	inj / powder	1 + 1				
	Vegetable carbon	Carbo mix	powder	2x 50g				
	Naloxone 0.4 mg/ml	Nexodal	inj	10x 1ml				
	Basic solution for fluid therapy, sodium chloride 9 mg/ml	Natriumklorid B. Braun	infusion solution	9-10x 500ml (MFAG 10x)				
	Phytomenadione (vitamin K) 10mg/ml	Konakion Novum 10mg/ml	inj	5 x 1ml				
9.	**Wound and skin teatment products**							
	Skin cleansing agent (e.g. povidone-iodine)	Betadine 100mg/ml	btl	2x 100ml				
	Hand sanitiser (Ethanol 60-70%)	LV desinfectant	btl	2 btl				
	Fucidic acid ointment 2%	Fucidin 2%	emulsion	15g				
	Anti-inflammatory and analgesic ointment (e.g. ketoprofen gel)	Felden 0,5 % gel	gel	100g				
	Chlorhexidine-hydrocortisone	Sibicort	emulsion	2x 20g				
	Terbinafine emulsion 1%	Terbistada 10 mg/ml	emulsion	2x 15g				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Bandages for minor burns (e.g. silicone dressing)	Lomatuell H	10cm x 10cm	2x 3-10 pcs				
	Bandages for minor burns (e.g. ointment tulle)	Jelonet	10cm x 30cm	10 pcs				
	Hydrocortisone emulsion 1%	Hydrokortisoni 1%	emulsion	20g				
	Basic lotion	Aqualan L	emulsion	2x 100g				
	Permethrine emulsion 5%	Nix 5%	emulsion	2x 30g				
	Permethrine shampoo 1%	Paranix	shampoo	1 bottle				
	Sunscreen lotion	Nivea Sun 30	emulsion	100g				
10.	**Medication for eye diseases**							
	Moisturising eye drops or gel (single-dose units)	Oftagel 2,5 mg/ml	eye drops	2x approx. 30 pcs				
	Pilocarpine 20 mg/ml eye drops	Isopto carpine 20mg/ml	eye drops	10 ml				
	Chloramphenicol eye drops 5 mg/ml single-dose units	Oftan Akvakol	eye drops	2 x (30x 0,25ml)			Store refrigerated	
	Chloramphenicol eye ointment 1%	Oftan Chlora 10mg/ml	ointment	2 x 4g (MFAG 5x)			Store refrigerated	
	Oxybuprocaine hydrochloride 4%	Oftan Obucain 4 mg/ml	eye drops	1 x 10ml (MFAG 5x)			Store refrigerated	

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
11.	**Drugs for ear and nose diseases**							
	Flumethasone pivalate-clioquinol (0.2 + 10 mg/ml)	Locacorten-Vioform	ear drops	2x 7,5ml				
	Product for ear wax removal	Remo-Wax	ear drops	1 btl				
	Pain relieving ear drops (e.g. cinchocaine)	Orodrops 12mg/ml	ear drops	10ml				
12.	**Local anaesthetics**							
	Lidocaine 10 mg/ml (1%)	Lidocain 10mg/ml	inj	20ml				
	Lidocaine gel 2 %	Instillido	gel	10x 10g				
	Cold spray		spray	Smallest package				
13.	**Dental and oral care products**							
	Temporary filling material	Cavit	tube	1 tube				
	Antimicrobial mouthwash (e.g. Povidone-iodine 10mg/ml Betadine)	Corsodyl 2mg/ml	btl	100 ml or smallest pkg				
14.	**Gynaecological pharmaceuticals (if women onboard)**							
	Fluconazole 150 mg	Diflucan 150mg fluconazol	caps	2x 1 caps.				
	Tranexamic acid 500 mg		tbl					
15.	**Tetanus booster vaccination and immune globulin**							
	diTeBooster	diTeBooster	inj	5 x 0,5ml				
	Tetanus immunoglobulin	Tetagam P		2x Smallest package				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
16.	**Irrigation and cleansing solutions, prevention**							
	Disinfectant solution for skin and superficial wounds	Deinfektol H 5mg/ml	btl	500 ml				
	Disinfectant for instruments and for general use	Neo Antisept	btl	500 ml				
	Water purification product			*			If sailing in suspected malaria area	
	Insect repellent			*			If sailing in suspected malaria area	
	Saline solution btl with cap (0.9% NaCl)	Natriumklorid 9mg/ml	btl	500 ml				
	Eye irrigation bottle		btl	2x 200-500ml				
17.	**Diagnostic products**							
	Strip for testing glucose, protein, blood, pH and leukocytes in urine	Combur³ Test	pack	1 pack				
	Strip for measuring blood glucose + measuring device	On Call	Device + Strips	1 set				
	Malaria rapid diagnostic test			*			If vessel comes to shore in a risk area classified by WHO	

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
Group	Active substance	Brand name	Size/ container	Required amount onboard	Stock onboard	Expiry date	Notes	Amount / order
18.	**Medical supplies**							
.1	**Resuscitation equipment (see First aid kit)**							
.2	**Bandages and stitching equipment**							
	Suture thread with needle, sterile 3–0			5				
	Suture removal hook (disposable, sterile)			5				
	First aid bandage	Cederroth	large	4				
	First aid bandage	Cederroth	small	3				
	Wound dressing	Mepore	10 x 20 cm	3				
	Wound closure tape (= butterfly closure)	Steri-Strip	medium	1 pack				
	Wound cleansing wipe	Cederroth	20 pcs	1 box				
	Ideal bandage	Pharmacare	6-8 cm	5				
	Self-adhesive support bandage	Pharmacare	7,5 cm	3				
	Elastic bandage 6-8 cm	Pharmacare	6-8 cm	10				
	Triangular bandage (single-use/fabric)		1 bandage	5				
	Fixation tape	Leukoplast	12,5 mm roll	3				
	Fixation tape	Leukoplast	25 mm roll	3				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Plaster (quick bandage, different sizes)	Salvequick	20 pcs container	5 package				
	Tubular gauze	Medrull	for limbs	1				
	Tubular gauze	Medrull	for fingers	1				
	Tubular net bandage (head/body)		1 m	1				
	Sterile gauze swabs	Mesoft	4 x 6 cm	20				
	Sterile gauze swabs	Mesoft	7 x 9 cm	20				
	Protective dressing		20 x 40 cm	2				
	Eye protector (satin)			2				
.3	**Instruments**							
	Instrument container (stainless steel or other suitable material)			**1**				
	Forceps, anatomical		approx. 13 cm	1				
	Forceps, surgical		approx. 13 cm	1				
	Tweezers for foreign objects (removal of splinters)		approx. 11 cm	1				
	Scalpel		No 10	5				
	Needle holder		approx. 17 cm	1				
	Scissors (straight, sharp/blunt)		approx. 13 cm	2				
	Scissors for general use		approx. 20 cm	1				
	Foreign body removal needle for eyes			1				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Vascular clamp (Crile) straight		approx. 13 cm	2				
	Razor blade (disposable)			5				
	Aperture drape/utility drape (disposable, sterile)			3				
.4	**Research and follow-up equipment**							
	Wooden tongue depressor		100 pcs container	1				
	Kidney bowl, disposable			10				
	Kidney bowl, stainless steel			1				
	Otoscope (rechargeable)			1				
	Otoscope funnel (disposable)		Ø 4mm tube/ 20 pcs	1				
	Thermometer			2				
	Quick-release torniquet			1				
	Stethoscope			1				
	Sterile gloves			10				
	Magnifying glass (headset)			1				
	Protective gloves		medium	100				
	Protective gloves		large	100				
	Surgical mask			15				
	Disposable Plastic Apron			10				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Protective spectacles or face protection visor			1				
	Cotton swabs		30 pcs container	2				
	Blood pressure gauge			1				
	Bed pad ("incontinence pad")			3				
.5	**Injection, perfusion, puncturing and catheterisation equipment**							
	Injection needle (disposable, sterile, luer lock)		21 G x 1 ½	1 container				
	Injection needle (disposable, sterile, luer lock)		23 G x 1	1 container				
	Injection syringe (disposable, sterile, luer lock)		1 ml	100 pcs container				
	Injection syringe (disposable, sterile, luer lock)		2 ml	100 pcs container				
	Injection syringe (disposable, sterile, luer lock)		5 ml	100 pcs container				
	Urinary catheterisation kit, sterile			1				
	Urinary catheter, disposable, sterile		Ch 12	2				
	Ear syringe (plastic or metal)			1				
	Fluid therapy system			3 (MFAG 10x)				
	Blood vessel cannula		1.0mm/20G	20				
.6	**Splinting and support equipment**							
	Stretchers (scoop stretcher or other carrying device)			1				
	Cold pack (joint injuries)	Ice power		4				

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Splints - Kit for splinting extremities (recommendation: vacuum splints)			1				
	Finger splint			2				
	Neck support brace (e.g. Stif-neck adjustable collar)			1				
.7	**General medical supplies**							
	Urine bottle (plastic)			1				
	Cold pack - hot pack (multi-purpose)			1				
	Measuring cup		30ml	20				
	Drinking straw (bending model)			10				
	Ear plugs (e.g. foam rubber)			20				
	Paper bags (for medicine)		50 pcs	1				
	Sanitary napkin		20 pcs	2				
	Sharp disposal container for needles and scalpels			1				

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MFAG drugs and medical supplies - Column A *access to treatment not possible within 24 hours of incident*

Group	Active substance	Brand name	Package / size	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
1.	**Drugs**							
	Amoxicillin 500 mg		tbl	20 tbl	**Medicine chest**	Group 7	MFAG guide: Table 9	
	Oxybuprocaine hydrochloride 4%	Oftan Obucain 4mg/ml	eye drops	5x 10ml	**Medicine chest**	Group 10	MFAG guide: Table 7	ok
	Chloramphenicol eye ointment 1%	Oftan Chlora 10mg/g	oinment	5 x 4g	**Medicine chest**	Group 10	MFAG guide: Appendix 7	order
	Atropine 1 mg (or 0.5 mg)/ml	Atropine 1 mg/ml	inj	25x 1ml			MFAG guide: Table 17	ordered
	Beclomethasone 100µg/dose	AeroBec + aerochamber	200 dose	5 inhalers			MFAG guide: Table 9	
	Calcium gluconate gel 2%	Kalsiumglukonaattigeeli 2,5%	gel	5x 25g tube			MFAG guide: Table 8 and 16	
	Ceftriaxone 1 g		inj. + inf. powder	10 x 1 g	**Medicine chest**	Group 7	MFAG guide: Table 10	
	Vegetable carbon	Carbo mix 50g	powder	2x 50g	**Medicine chest**	Group 8	MFAG guide: Table 10	
	Diazepam 10 mg/dose (=2,5ml enema)	Stesolid	enema solution	5x 10mg			MFAG guide: Table 4, 5 and 6	
	Doxycycline 100 mg		tbl	10 tbl	**Medicine chest**	Group 7	MFAG guide: Table 9	
	Ethyl alcohol solution 96%	Spiritus Fortis	btl	3x 500ml			MFAG guide: Table 19 (edited)	

Group	Active substance	Brand name	Package / size	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
2.	**Medical supplies**							
	Pharyngeal tube		size 3	3	**1 in First aid kit**		MFAG guide: Appendix 3	
	Pharyngeal tube		size 4	2	**1 in First aid kit**		MFAG guide: Appendix 3	
	Blood vessel cannula		1.0mm/20G	10	**Medicine chest**	Group 18.5	MFAG guide: Appendix 13	
	Fluid therapy equipment			10	**Medicine chest**	Group 18.5	MFAG guide: Appendix 13	
	Injection needle		21 G x 1 ½	100	**Medicine chest**	Group 18.5		
	Disposable face mask (which can be used to administer 60% oxygen)			10	**10**		MFAG guide: Appendix 3	
	Manual ventilation device	Ambu		2	**First aid kit**		MFAG guide: Appendix 3	
	Oxygen tank			40 L / 200 bar	**First aid kit**		MFAG guide: Appendix 3	
	Portable oxygen administration device ready for use			2 L / 200 bar	**First aid kit**		MFAG guide: Appendix 3	
	Portable spare oxygen tank			2 L / 200 bar	**First aid kit**		MFAG guide: Appendix 3	
	Injection syringes		2 ml	100	**Medicine chest**	Group 18.5		
	Injection syringes		5 ml	10	**Medicine chest**	Group 18.5		

Group	Active substance	Brand name	Package / size	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Fluorescein		strip	5			MFAG guide: Appendix 7	
	Furosemide 10 mg/ml		inj	25x 2 ml	**Medicine chest**	Group 1	MFAG guide: Table 2 and 9	
	Metoclopramide 5 mg/ml	Primperan 5mg/ml	inj	3x (12 x 2ml)	**Medicine chest**	Group 2	MFAG guide: Table 7, 8, 10, 13, 15 and 20	
	Metronidazole 500 mg		supp	10x 10 supp			Use as instructed by a doctor	
	Oxycodone 10 mg/ml	Oxynorm 10mg/ml	inj	8x 5x1ml	**Medicine chest**	Group 3	MFAG guide: Table 7, 8, 10 and 13	
	Naloxone 0.4 mg/ml	Nexodal	inj	10x 1ml	**Medicine chest**	Group 8	MFAG guide: Table 4 and 13	
	Oral rehydration salt (ORS)	Fluid Balans	bag	36 bags			MFAG guide: Table 8, 10 and 11	
	Paracetamol 500 mg	Panadol Novum	tbl	2x 100 tbl	**Medicine chest**	Group 3	MFAG guide: Table 7, 8 and 13	
	Phytomenadione (vitamin K) 10 mg/ml		inj	5 x 1 ml	**Medicine chest**	Group 8	MFAG guide: Table 14	
	Albuterol 200 µg/dose	Ventoline Evohaler 0,1mg	200 dose	5 inhalers			MFAG guide: Table 9	
	Isotonic saline solution 9 mg/ml (0.9%)		infusion solution	10x 500ml	**Medicine chest**	Group 8	MFAG guide: Table 7	

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First aid kit - Vessel Category A, B and C

Group	Active substance	Brand name	Package / size	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
1.	**Drugs**							
	Sodium chloride 0.9%		infusion solution	500-1000 ml				
	Epinephrine auto-injector 300 µg (e.g. EpiPen)	EpiPen 300 µg Autoinjektori	inj pen	1				
	Atropine 1 mg/ml	Atropine 1 mg/ml	inj	25x 1ml				
	Hydrocortisone 125 mg/ml (250 mg) (Solu-Cortef)	Solu-Cortef 250ml/g	inj	2x 250mg (=2ml)				
2.	**Resuscitation equipment**							
	Space blanket			1				
	Oxygen administration device + oxygen tank (2 l) + spare tank			1				
	Manual ventilation device and masks (different sizes: S, M, L)	Ambu		1				
	Suction unit (e.g. manually operated Laerdal suction unit)	V-Vac		1				
	Suction tube (mucus catheter) that is compatible with the suction unit		No 12	3				
	Suction tube (mucus catheter) that is compatible with the suction unit		No16	3				
	Pharyngeal tube		No 3	1				
	Pharyngeal tube		No 4	1				
	Protection kit for mouth-to-mouth resuscitation			2				
	Protective gloves			4				
3.	**Instruments and bandages**							
	Stethoscope			1				
	Blood pressure gauge			1				
	Quick-release torniquet			1				
	Pulse oxymeter + batteries + spare batteries			1				

Group	Active substance	Brand name	Package / size	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
	Fluid therapy equipment			1				
	Skin cleansing swab	Neo-Amisept		10				
	Blood vessel cannula		1,0 mm/20 G	2				
	Blood vessel cannula		1,4 mm/17 G	2				
	Syringe		2 ml	2				
	Syringe		5 ml	2				
	Needle		20 G x 1 ½	5				
	Needle		21 G x 1 ½	5				
	Needle		23 G x 1	5				
	Vascular clamp, straight (Crile)			1				
	Fixation tape	Leukoplast	2,5 cm roll	1				
	Bias tape		1m	1				
4.	**Airway management**							
	Airway control system: pharyngeal tube and laryngeal mask airway or laryngeal tube.	I-Gel	adult size	1 + 1				
	Magill forceps (for the removal of foreign objects from the airway/pharynx)		adult size	1				
5.	**Wound and burn treatment**							
	Fixation tape	Pharmacare	1cm roll	1				
	Scissors, straight			1				
	First aid bandage		large	1				
	Trauma Tourniquet			1				

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Life boat - Vessel Category A, B and C

Group	Active substance	Brand name	Package / size	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
1.	**Drugs**							
	Skin cleansing agent (local antiseptic)	Betadine	btl	100 ml				
	Meclizine 25 mg	Postafen 25mg	tbl	5x 10 tbl				
	Paracetamol 500 mg	Panadol Novum 500mg	tbl	30 tbl				
	Loperamide 2 mg	Imodium 2mg	tbl	16 tbl				
	Isosorbide dinitrate 5 mg	Nitrosid 5mg tabl	tbl	100 tbl				
2.	**Bandages and instruments**							
	First aid bandage	Cederroh 4-in-1	large	1				
	First aid bandage	Cederroh 4-in-1	small	1				
	Resuscitation mask	Cederroh		1				
	Wound dressing	MEPORE	10 x 20 cm	2				
	Elastic bandage	Pharma Care	10 cm	1				
	Burn dressing	Jelonet		1				
	Fixation tape	Leukoplast	1 m x 2,5 cm	1				
	Butterfly closure	3M Steri-Strip	medium	10 strips				
	First aid guide	Suomen punainen risti		1				
	Scissors			1				
	Protective gloves			10				

Langh Ship

Medical Disposal

The following items were removed and taken for disposal to pharmacy ____

Date __/__/____ **M/S** _____

Group	Active substance	Brand name	Quantity

Master

Pharmacy

Langh Ship

Medical order

We order the following items for M/S _____

Date __/__/____

Group	Active substance	Brand name	Quantity
Medicine chest			
MFAG			
First aid			
Life boat			

Officer

Name

Master

Name

Langh Ship	Medicine dispense and treatment log		M/S _____	Year
Date	**Name of patient**	**Symptoms / reason for treatment**	**Dispensed medicine / given treatment**	**Med. Off. Sign**

Recommended to use this instead of brand name when ordering

Update these when new medicines are received

Medicine chest - Vessel Category B

Group	Active substance	Brand name	Package	Required quantity onboard	Stock onboard	Expiry date	Notes	Amount / order
			Medicines					
1.	**Medicinal products for the cardiovascular system**							
	Isosorbide dinitrate 5 mg tab	Nitrosid 5 mg	tbl	100 tbl				ok
	Acetylsalicylic acid 100 mg	Primaspan 100 mg	tbl	100 tbl				order
	Clopidogrel 75 mg	Clopidogrel orion 75mg	tbl	30 tbl				ordered

Only change this column if there are changes to the law

E.g. Store in narkotick locker or refrigerator

Keep this column updated, especially when giving handover to other officer