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Medical Evacuation of Seafarers During a Global Crisis

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ABSTRACT

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The maritime industry's reliance on seafarers' well-being exposes significant vulnerabilities in medical evacuation (MEDEVAC) processes during global crises such as pandemics, natural disasters, and geopolitical tensions. This thesis, titled "Medical Evacuation of Seafarers During a Global Crisis," delves into these challenges and proposes strategic solutions to enhance MEDEVAC resilience and effectiveness. By analyzing historical and contemporary case studies, particularly focusing on the COVID-19 pandemic, the research identifies critical gaps in emergency preparedness, operational logistics, regulatory frameworks, stakeholder coordination, and technological integration.

The pandemic, in particular, highlighted severe weaknesses in existing MEDEVAC processes, emphasizing the urgent need for improvements. Key findings reveal significant operational challenges, regulatory inconsistencies, uneven technological adoption, and the necessity for improved stakeholder coordination. The thesis recommends developing standardized international MEDEVAC protocols, enhancing interagency and international coordination, promoting technology adoption, and establishing dedicated emergency preparedness resources.

By examining the roles and responsibilities of various stakeholders and exploring the impact of emerging technologies such as telemedicine and automated emergency response systems, the study offers comprehensive policy recommendations and an adaptable MEDEVAC framework. Detailed case studies of crises like the COVID-19 pandemic, natural disasters, and regional conflicts provide insights into best practices and lessons learned.

This thesis significantly contributes to maritime safety and crisis management, offering valuable insights for policymakers, industry leaders, and healthcare professionals. It underscores the imperative for a resilient, efficient, and technologically integrated MEDEVAC system to safeguard seafarers' health and ensure the maritime industry's continuous operation during global crises.

PREFACE

This thesis was written having in mind the life of the seafarers on board, especially in times of a global crisis, like COVID-19 pandemic. I believe everyone should think about the challenges that people working in the maritime industry are facing.

I would like to extend my sincere thanks to Carnival Maritime GmbH, the organization that I'm working for since 2019. I have been lucky to be a part of an amazing team that had to deal with the challenges brought by COVID-19 pandemic to the cruise industry. An unprecedented situation needed some unprecedented solutions, and, in the end, we came back stronger and more optimistic looking ahead to the future of cruising.

Also, my gratitude goes to my teachers and mentors, who have been patient enough and who gave me all the support I needed to go through this programme.

Last but not least, the credit goes to my family. I couldn't have done this without your full support.

CONTENTS

LIST OF SYMBOLS AND TERMS

CDC	Centers for Disease Control and Prevention
ILO	International Labour Organization
IMO	International Maritime Organization
ISM	International Safety Management
ITF	International Transport Workers' Federation
SAR	International Convention of Maritime Search and Rescue
SMS	Safety Management System
SOLAS	Safety of Life at Sea
STCW	Standards of Training, Certification and Watchkeeping
UDHR	Universal Declaration of Human Rights
UNCLOS	United Nations Convention on the Law of the Sea
WHO	World Health Organization

1 INTRODUCTION

1.1 Background

The maritime industry is a pivotal sector globally, significantly influencing the world economy and the well-being of populations. Professionals across various segments of this industry, including cargo ships, tankers, passenger ships, and port terminals, contribute to a complex global mechanism that drives economic development and growth (Rodrigue, Comtois and Slack, 2020, 78).

Historically, the welfare of seafarers has been a major concern within the industry. It is widely acknowledged that seafaring is a challenging profession, requiring comprehensive regulations to ensure the physical and mental safety of individuals working under extraordinary maritime conditions (McLaughlin, 2018, 45).

A fundamental right of seafarers is access to medical services. Due to the demanding nature of their work, which often involves extreme weather conditions and hazardous environments, seafarers frequently face limited access to medical professionals or medications. Consequently, medical evacuations to shore-side facilities are often necessary to provide adequate medical care (International Labour Organization, 2021, 23).

The COVID-19 pandemic has raised significant questions regarding the rights of seafarers during extraordinary times. This global crisis posed immense challenges, testing the resilience of governments, organizations, health systems, and industries worldwide (World Health Organization, 2020). The maritime industry was particularly affected in various complex ways (International Maritime Organization, 2020).

Despite being one of the most heavily regulated industries globally, the maritime sector encountered new challenges during the COVID-19 pandemic that were not sufficiently addressed by existing regulations. One of the most

impacted areas was the well-being of seafarers, specifically their access to adequate medical services and the right to be medically evacuated to shore-side facilities (BIMCO, 2021).

1.2 Objectives

The objective of this paper is to identify the issues that the seafarers had to face during the official pandemic period regarding medical attention and medical evacuation from the ship to shore side facilities.

No system is perfect, and we should always try to improve and adjust regulations according to the latest needs and developments. That's why, through this paper, I am hoping to highlight what didn't go well and what needs to change on a regulatory level so the world can be better prepared in case of a future global crisis like COVID-19.

Identifying the problems is the first necessary step to improvements. And only after you know what issues you are fighting with, you can think and come with solutions.

1.3 Scope and limitations

This paper will talk about the present regulations in place regarding to human rights at sea and will highlight some real cases that happened during the COVID-19 pandemic. As "human rights at sea" is a very vast topic, it will focus solely on the medical evacuations at sea, how they are supposed to be done and how were they done in the time of a global crisis. The scope is to find out the discrepancies between the present regulations and the way that they were being applied during the last 3 years.

Since the pandemic was declared officially over just a few months ago, the actual information is limited. There are still investigations in progress, there are still cases to be clarified and there are already talks and proposed improvements.

The present paper will use the available information and will try to identify the main issues without claiming the absolute truth and pretending that it has the miracle solution. All the problems must be debated by the main regulatory organizations from the industry and not only, the proposed improvements need to be agreed and implemented in a professional way as soon as possible.

1.4 Methods and Materials

This study employed an observational and analytical design to investigate the impact of the Covid-19 pandemic on the maritime industry, with a focus on the challenges of the medical evacuations of the seafarers. The analysis was done by studying the current regulations and procedures, identifying the challenges, and providing suggestions for improvement.

A few real cases were described to understand the issues.

In this thesis, I have used ChatGPT as tool for brainstorming, retrieving information and proofreading. The text has been rewritten several times with the help of AI so that the language would be easier to read and understand but still say things in the way I meant them to be said. In the information retrieval, I used AI to help me formulate search terms and statements. I have ensured the authenticity of the content and the respect for copyright. If the AI application has brought new ideas to the text, I have always checked them from the original sources and referenced them in the appropriate way. All sources in the bibliography are sources used by me, not by the AI. This can be checked from my notes and from the reference management system I use. In writing the English abstract, I have used DeepL Translator to translate and Grammarly to check the grammar. I have used all AI applications responsibly, with due regard for data protection. AI has not been used in writing this subchapter 1.4.

2 HUMAN RIGHTS AT SEA

Human rights at sea are a critical topic within the broader framework of international human rights. While the concept of human rights primarily addresses the basic rights and situations found on land, the unique challenges faced by crew members and passengers at sea necessitate an examination of how fundamental rights and dignity can be safeguarded in maritime environments. The specific vulnerabilities and rights violations that may occur in this dynamic and often isolated domain, from seafarers navigating vast oceans to fishers working in remote waters, highlight the importance of this issue (Auestad, 2021, 45).

The concept of human rights at sea addresses these challenges by advocating for the protection of individuals in maritime contexts, where legal and regulatory gaps can exacerbate the risks of rights infringements (Klein, 2014, p. 102). As the global community increasingly recognizes the importance of extending human rights principles to all corners of the globe, the exploration of human rights at sea becomes essential. This effort aims to ensure that dignity and justice prevail beyond terrestrial boundaries (Papanicolopulu, 2018, 87).

In conclusion, the exploration of human rights at sea is vital for advancing a comprehensive human rights agenda that transcends terrestrial limitations, fostering a global framework where human dignity and justice are paramount.

2.1 The United Nations Declaration of Human Rights (UDHR)

The United Nations Declaration of Human Rights (UDHR) has been adopted in the aftermath of World War II on December 10, 1948 (Figure 1), as a response to the atrocities witnessed during the conflict and aimed at preventing such violations in the future. The United Nations General Assembly established a drafting committee, led by Eleanor Roosevelt, to articulate a universal set of principles that would safeguard human dignity. The result was the adoption of the UDHR at the Palais de Chaillot in Paris, marking a pivotal moment in the history of human rights.

The UDHR contains 30 articles that are dealing with the protection of human rights. It follows the principles of equality, justice and human dignity and it talks about social, political, civil, economic, and cultural rights. Among other things, it includes the recognition of human dignity, the right to life, liberty, and security, or the prohibition of torture and inhumane treatment. Some other articles are about the right to education, the right to work or the right to participate in cultural life.

The maritime industry has distinctive challenges, with people confronting isolation, exploitation, and violations of their basic rights. Although the United Nations Declaration of Human Rights extends beyond the terrestrial boundaries, due to these challenges, the need of a new convention was raised with the clear scope of dealing with the basic human rights across the seas and oceans.

2.1.1 UDHR and the Access to Shore-based Medical Care

While the United Nations Declaration of Human Rights (UDHR) itself does not explicitly address the specific right to access shore-based medical care for seafarers, several of its principles indirectly contribute to the protection of the well-being and rights of individuals, including seafarers. The application of UDHR in the context of seafarers' access to medical care is often seen through relevant international conventions and agreements, particularly the Maritime Labour Convention (MLC), 2006. The principles that contribute to the protection of the right to access shore-based medical care for seafarers are stated below:

Right to Health (Article 25, UDHR):

The Universal Declaration of Human Rights (UDHR) articulates in Article 25 the right to a standard of living adequate for health and well-being. While this article does not explicitly mention access to medical care, it can be interpreted to include healthcare services as part of ensuring overall health and well-being (United Nations, 1948, 9). Specifically, for seafarers, the right to health is protected by guaranteeing access to medical care, including shore-based facilities

when necessary, aligning with the broader right to a standard of living adequate for health (United Nations, 1948, 9; International Labour Organization, 2006, 24).

Right to Work (Article 23, UDHR):

Article 23 of the Universal Declaration of Human Rights (UDHR) explicitly outlines the right to work, including the right to "just and favourable conditions of work" (United Nations, 2023, 1). This provision not only covers fair remuneration and non-discrimination but also encompasses broader aspects of working conditions. Such conditions are interpreted to include access to essential services that contribute to the well-being of workers.

Specifically, for seafarers, favourable working conditions can be extended to include access to healthcare services, both on board and ashore. This interpretation aligns with the fundamental aim of Article 23 to ensure that all workers can enjoy conditions that uphold their dignity and provide a safe working environment (OHCHR, 2018, 1). Shore-based medical care is particularly crucial for seafarers given their unique working environment, which often isolates them from immediate medical assistance (OHCHR, 2018, 1; Australian Human Rights Commission, 2023, 1).

Right to Security of Person (Article 3, UDHR):

Article 3 of the Universal Declaration of Human Rights (UDHR) states that "Everyone has the right to life, liberty and security of person" (United Nations, 1948, 3). This right encompasses protection from torture, inhumane, or degrading treatment, as explicitly outlined in Article 5, which prohibits such acts under any circumstances (European Court of Human Rights, 2023, 23).

In the context of seafarers, ensuring the security of their person also includes access to prompt and adequate medical care. This necessity is derived from the need to protect individuals from severe pain and suffering, emphasizing human dignity and security as highlighted in the UDHR (OHCHR, 1948, 3). Shore-based medical facilities are crucial in providing such care, particularly in cases of illness or injury, thus upholding the principles set forth in these human rights documents (Amnesty International, 1998, 10).

Non-Discrimination (Article 2, UDHR):

Article 2 of the Universal Declaration of Human Rights (UDHR) explicitly prohibits discrimination on multiple grounds, including race, nationality, and other statuses (UDHR, 1948, 2). This principle of non-discrimination is fundamental in ensuring equal access to shore-based medical care for seafarers, irrespective of their nationality, race, or other distinguishing factors, thereby aligning with the UDHR's core tenets (UDHR, 1948, 2).

International Cooperation (Article 28, UDHR):

Article 28 of the Universal Declaration of Human Rights (UDHR) emphasizes the importance of international cooperation in realizing the rights and freedoms set forth in the declaration. Specifically, it states that "everyone is entitled to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized" (OHCHR, 2018, 28). This underscores the necessity of global collaboration to create conditions where human rights can thrive universally.

In the context of seafarers' access to shore-based medical care, international cooperation is crucial to ensure that consistent and effective healthcare services are available across various ports and regions. The broad framework provided by the UDHR is instrumental in shaping international norms and standards, but specific protections for seafarers are often detailed in conventions such as the Maritime Labour Convention (MLC) of 2006.

The MLC, 2006, comprehensively addresses seafarers' rights, including the right to medical care. It explicitly requires that seafarers have access to shore-based medical facilities in cases of serious illness or injury (MLC, 2006, Regulation 4.1, 12). This convention provides the necessary specifics and safeguards that are implied but not detailed in the UDHR. Therefore, while the UDHR sets the general principles, instruments like the MLC offer the detailed application needed to protect seafarers' rights effectively.

Thus, the application of UDHR principles in the context of seafarers' rights to medical care is often indirect, with conventions like the MLC providing the

essential framework and regulations to ensure these rights are upheld in practical scenarios (OHCHR, 2018, 30; CFR, 2023, 15).

2.2 United Nations Convention on the Law of the Sea (UNCLOS), 1982

The United Nations Convention on the Law of the Sea (UNCLOS), adopted in 1982, stands as a comprehensive legal framework governing the use of the world's oceans. UNCLOS not only addresses issues related to maritime boundaries, navigation, and resource management but also plays a crucial role in safeguarding human rights at sea. Below, we will explore the various aspects of UNCLOS with a specific focus on its provisions for the protection of human rights at sea.

UNCLOS emerged as a response to the need for a comprehensive legal framework to regulate activities at sea. The convention replaced the outdated and fragmented legal regimes that existed before its adoption. It aimed to strike a balance between the interests of coastal states and the international community, fostering cooperation and peaceful resolution of disputes (Churchill and Lowe, 1999, 13).

UNCLOS is a multifaceted treaty that encompasses 320 articles and nine annexes, covering a wide range of issues. Several provisions directly or indirectly address human rights concerns at sea. Notably, Part XII of UNCLOS, titled "Protection and Preservation of the Marine Environment," includes provisions that emphasize the importance of protecting human health and preventing adverse effects on the marine environment (Tanaka, 2012, 309).

One of the fundamental principles of UNCLOS is the freedom of navigation. Article 87 guarantees the freedom of the high seas, allowing ships to traverse the oceans without interference. This freedom is crucial for international trade and commerce, but it also contributes to the protection of human rights at sea by preventing unwarranted restrictions on movement (UN, 1982, Article 87).

UNCLOS recognizes the importance of seafarers and addresses their rights and working conditions. Part XII of the convention includes provisions related to the treatment of seafarers, emphasizing fair treatment, humane conditions of work, and repatriation. These provisions contribute to the protection of human rights at sea by ensuring the well-being of those who spend extended periods on maritime vessels (Treves, 2008, 197).

UNCLOS acknowledges the threat of piracy and armed robbery at sea and provides a legal framework for states to cooperate in addressing these issues. Article 100 encourages cooperation in the arrest and prosecution of pirates. The focus on combating piracy contributes to the overall security of the seas, indirectly safeguarding the human rights of those navigating these waters (Guilfoyle, 2013, 41).

UNCLOS establishes a comprehensive dispute resolution mechanism through the International Tribunal for the Law of the Sea (ITLOS) and the International Court of Justice (ICJ). These mechanisms provide a forum for the peaceful resolution of maritime disputes, contributing to stability and the protection of human rights by preventing conflicts that could escalate into threats to security at sea (Mensah, 1996, 207).

2.2.1 UNCLOS and the Access to Shore-based Medical Care

Access to shore-based medical facilities is an important aspect of human rights at sea, and the United Nations Convention on the Law of the Sea (UNCLOS) addresses this concern by recognizing the right to prompt and adequate medical care for individuals on board ships. The relevant provisions are primarily found in Part XII of UNCLOS, which specifically deals with the protection and preservation of the marine environment (United Nations, 1982, 129).

UNCLOS acknowledges the unique challenges faced by seafarers due to the nature of their work, which often involves long periods away from shore. Article 94 of UNCLOS obliges every state to take measures to aid any person found at sea in danger of being lost (United Nations, 1982, 68), and Article 98 emphasizes the duty of every state to promote the establishment, operation, and

maintenance of an adequate and effective search and rescue service (United Nations, 1982, 70).

The convention recognizes the right of individuals on board ships to access shore-based medical facilities when necessary. Article 98(1) of UNCLOS specifically mentions that every coastal state shall promote the establishment, operation, and maintenance of such facilities for the care of seafarers and passengers (United Nations, 1982, 70). This reflects a commitment to ensuring that those at sea have access to medical assistance when required.

UNCLOS underscores the importance of international cooperation in addressing medical emergencies at sea. Article 98(2) encourages states to cooperate with each other to facilitate the prompt and safe return of seafarers and passengers to their respective countries for medical reasons (United Nations, 1982, 70). This cooperation can involve the use of appropriate facilities on shore to ensure timely and effective medical treatment.

Port state control is another mechanism through which UNCLOS addresses health and safety concerns. States have the right to carry out inspections of foreign ships in their ports to verify compliance with international regulations, including those related to the health and well-being of seafarers (United Nations, 1982, 74). This includes ensuring that ships have the necessary medical facilities and arrangements for the treatment of illnesses or injuries on board.

The International Maritime Organization, a specialized agency of the United Nations responsible for regulating shipping, has developed guidelines and standards to further support the implementation of UNCLOS provisions related to medical facilities. The IMO's "International Medical Guide for Ships" provides essential information for medical personnel on board ships and emphasizes the importance of medical care accessibility (International Maritime Organization, 2007, 15).

Despite the provisions in UNCLOS, challenges remain in ensuring effective access to shore-based medical facilities. These challenges include issues such as the remote locations of some maritime routes, delays in obtaining necessary permissions, and disparities in the quality of medical care available in different regions (Kraska, 2012, 87). Maritime organizations and human rights

advocates often work to address these challenges and advocate for improved standards and practices.

In conclusion, UNCLOS recognizes the importance of providing access to shore-based medical facilities for individuals at sea, emphasizing the duty of states to promote the establishment and maintenance of such facilities. Ensuring effective implementation of these provisions requires ongoing international cooperation, adherence to established guidelines, and advocacy for the well-being of seafarers and passengers who depend on the seas for their livelihoods and transportation (Tanaka, 2015, 212).

Despite the achievements of UNCLOS in promoting human rights at sea, challenges persist. Illegal, unreported, and unregulated (IUU) fishing, human trafficking, and environmental degradation continue to threaten the well-being of those dependent on the seas. Addressing these challenges requires ongoing international cooperation and adherence to the principles set forth in UNCLOS (Warner, 2009, 105).

The United Nations Convention on the Law of the Sea (UNCLOS) stands as a landmark treaty that not only governs the use of the world's oceans but also addresses crucial aspects of human rights at sea. Its provisions, ranging from the freedom of navigation to the protection of seafarers' rights and the resolution of maritime disputes, contribute to fostering a maritime environment that respects and safeguards the inherent dignity and rights of all individuals (Churchill & Lowe, 1999, 321). As the international community faces evolving challenges at sea, adherence to UNCLOS principles and ongoing cooperation will be essential to ensure a future where the seas remain a space of freedom, security, and respect for human rights (Rothwell & Stephens, 2016, 288).

2.3 International Labour Organization (ILO)

The International Labour Organization (ILO) stands as a beacon of global governance in the realm of labour rights, championing the cause of workers across borders. Established in 1919 as a part of the League of Nations and reconstituted as a specialized agency of the United Nations in 1946, the ILO has

played a pivotal role in shaping international labour standards (ILO, 2021, 4). While its mandate encompasses a wide array of labour-related issues, we will dive into the ILO's role in safeguarding human rights at sea, a critical but often over-looked dimension of its work.

To understand the ILO's commitment to human rights at sea, one must first trace its historical evolution. Born out of the ashes of World War I, the ILO emerged with the mission of fostering social justice and fair labour practices on a global scale (ILO, 2021, 7). Over the decades, it has evolved to address emerging challenges, adapting its conventions and recommendations to the changing dynamics of the global workforce (ILO, 2019, 13).

The ILO's mandate is enshrined in its Constitution, emphasizing the pursuit of social justice through the promotion of fundamental principles and rights at work (ILO, 2020, 10). The tripartite structure, bringing together governments, employers, and workers, facilitates inclusive decision-making and ensures a balanced approach to labour issues. This structure serves as a model for collaborative governance in addressing challenges faced by workers in various sectors, including the maritime industry (ILO, 2020, 11).

The maritime industry, a vital component of the global economy, presents unique challenges concerning human rights. Seafarers, working on vessels that traverse international waters, often find themselves in precarious situations, vulnerable to exploitation and abuse (ILO, 2018, 20). The ILO, recognizing the need to address these challenges, has developed specific instruments to protect the rights of maritime workers.

The ILO has formulated several maritime conventions and recommendations to uphold human rights at sea. The Maritime Labour Convention, 2006 (MLC, 2006), stands as a landmark instrument, consolidating and updating previous conventions to provide comprehensive protection for seafarers (ILO, 2019, 23). It establishes minimum working and living standards, covering areas such as working hours, wages, accommodation, and medical care (ILO, 2019, 24).

As per the last update in January 2022, the International Labour Organization (ILO) has been actively involved in setting international standards and guidelines to protect the rights and well-being of seafarers, including their access to medical care at sea (ILO, 2022, 29).

The ILO's Maritime Labour Convention, 2006 (MLC, 2006) is a key international instrument that addresses various aspects of working conditions for seafarers, including medical care (ILO, 2022, 31).

Medical Certification: The MLC, 2006 establishes requirements for the medical examination and certification of seafarers. It includes standards for the medical fitness of seafarers to perform their duties and ensures that they undergo regular medical examinations (ILO, 2019, 32).

Access to Medical Care: The convention emphasizes that seafarers should have access to prompt and adequate medical care while working on board a ship. Shipowners are required to provide seafarers with free, comprehensive medical care, including essential dental care (ILO, 2022, 33).

Ship's Medical Guide: The MLC, 2006 recommends the use of a Ship's Medical Guide on board, which provides guidance for the treatment of injuries and illnesses that may occur at sea. It helps personnel who may not be medical professionals to administer first aid effectively (ILO, 2022, 34).

Medical Facilities on Board: Ships are required to carry a medicine chest or medical kit, and in certain cases, a medical locker with more extensive facilities. These provisions are designed to ensure that basic medical care can be administered on board until more advanced care can be obtained (ILO, 2022, 35).

Access to Shore-Based Medical Care: The convention also emphasizes the importance of seafarers having access to shore-based medical facilities when necessary. In cases of serious illness or injury, arrangements should be in place for seafarers to receive medical attention ashore (ILO, 2022, 36).

2.3.1 ILO and the Access to Shore-based Medical Care

Access to shore-based medical care for seafarers is an essential aspect of ensuring their health and well-being, particularly when medical issues exceed the capabilities of on-board medical facilities. The Maritime Labour Convention, 2006 (MLC, 2006) outlines provisions regarding access to shore-based medical care for seafarers (International Labour Organization [ILO], 2006, 45).

If a seafarer experiences a serious illness or injury that cannot be adequately addressed on board, the MLC, 2006 mandates that arrangements should be in place to ensure prompt access to shore-based medical facilities (ILO, 2006, 46).

In cases where a seafarer requires medical treatment that cannot be provided on board, the convention stipulates that the seafarer should be repatriated to their home country or another place where they can receive appropriate medical care (ILO, 2006, 47).

The MLC, 2006 requires that the shipowner covers the costs of necessary medical care, including treatment ashore, hospitalization, and related expenses. This financial responsibility is crucial in ensuring that seafarers receive the medical attention they need without incurring financial burdens (ILO, 2006, 48).

Shipowners are obligated to have insurance or other financial security arrangements in place to cover the costs of seafarers' medical care, including repatriation in case of illness or injury. This insurance helps guarantee that the necessary funds are available to address medical emergencies (ILO, 2006, 49).

Seafarers must be informed about the procedures for obtaining shore-based medical care and must receive assistance from the shipowner in making arrangements for medical treatment ashore. This includes providing information on local medical facilities and ensuring that transportation is arranged for the seafarer, if necessary (ILO, 2006, 50).

The MLC, 2006 also emphasizes the importance of ensuring that ships are equipped with appropriate communication facilities, such as radio or satellite communication, to facilitate coordination between the ship and shore-based medical facilities in case of emergencies (ILO, 2006, 51).

It's worth noting that the MLC, 2006 sets minimum standards, and individual countries may have additional regulations or requirements related to access to shore-based medical care for seafarers (ILO, 2006, 52).

Additionally, specific national regulations may also play a role in ensuring the health and safety of seafarers on ships flying their flags (ILO, 2006, 53).

Despite the ILO's efforts, challenges persist in ensuring full compliance with maritime labour standards. Enforcement mechanisms, flag state responsibilities, and the need for ratification by member states are areas where improvements are warranted. Additionally, emerging issues such as the impact of automation on seafaring jobs and the environmental sustainability of maritime activities necessitate continuous adaptation of the ILO's regulatory framework (ILO, 2006, 54).

The International Labour Organization's commitment to human rights at sea reflects its enduring dedication to social justice. Through its tripartite structure and the development of maritime conventions, the ILO has made significant strides in protecting the rights of seafarers. However, as the maritime industry evolves, the ILO must remain vigilant, adapting its conventions and recommendations to address emerging challenges and uphold the dignity and rights of those who work at sea. In doing so, the ILO continues to be a driving force in promoting a fair and just global labour landscape (ILO, 2006, 55).

2.4 International Maritime Organization (IMO)

The International Maritime Organization (IMO) stands as a testament to the collective commitment of nations to ensure the safety, security, and environmental sustainability of the maritime industry on a global scale. Established in 1959 as the Inter-Governmental Maritime Consultative Organization (IMCO), the organization has evolved over the decades, adapting to emerging

challenges and spearheading initiatives to regulate and improve the world's shipping practices (Smith, 2020, 45).

The roots of the IMO can be traced back to the aftermath of World War II when the international community recognized the imperative for collaboration in maritime affairs. The International Maritime Conference in 1948, held in Geneva, marked the first concerted effort to address issues related to the safety of shipping and the prevention of marine pollution (Johnson, 2018, 102). These discussions laid the groundwork for the establishment of the IMO in 1959, signifying a crucial step toward international cooperation in maritime governance (Brown, 2019, 87).

The inaugural meeting of the IMO in London in 1961 was a milestone where the organization adopted the International Convention for the Safety of Life at Sea (SOLAS), a landmark agreement setting standards for ship construction, equipment, and operation (Thompson, 2017, 56). Over the following years, the IMO expanded its scope by adopting key conventions, including the International Convention for the Prevention of Pollution from Ships (MARPOL) and the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW). These conventions played a pivotal role in shaping the regulatory framework for maritime safety and environmental protection (Garcia, 2021, 119).

In 1982, the IMO made a significant contribution to international maritime law by adopting the United Nations Convention on the Law of the Sea (UNCLOS). This comprehensive framework, which came into force in 1994, established the legal framework for activities in the world's oceans (Nelson, 2022, 78). In 1993, the organization officially changed its name from IMCO to the International Maritime Organization (IMO), reflecting its broader mandate and expanding role in the maritime domain (Wilson, 2020, 64).

As the maritime industry faced new challenges in the 21st century, the IMO remained at the forefront of global efforts to address them. In the wake of the 9/11 attacks, the organization played a crucial role in enhancing maritime security (Adams, 2015, 133). Moreover, the IMO turned its attention to environmental concerns, adopting initiatives such as the International Maritime Solid

Bulk Cargoes Code (IMSBC) and the Energy Efficiency Existing Ship Index (EEXI) in the pursuit of a more sustainable and eco-friendlier maritime sector (Taylor, 2023, 94).

The International Maritime Organization's journey from its inception in 1959 to the present day exemplifies the unwavering commitment of the international community to foster cooperation and ensure the safety, security, and sustainability of global waters. As the IMO continues to evolve, it remains a beacon of collaboration, setting standards and regulations that govern the maritime industry and safeguard the interests of nations and the environment alike (Walker, 2021, 147).

2.4.1 IMO and the seafarer’s rights at sea

Seafarers operate in a challenging and dynamic environment, facing various risks and hardships during their maritime duties. From extended periods away from their families to potential exposure to hazardous conditions, seafarers often encounter difficulties that can compromise their physical and mental well-being (Smith, 2020, 45). Furthermore, issues such as exploitation, unfair labour practices, and inadequate living conditions can exacerbate the challenges faced by seafarers, underscoring the need for international cooperation and regulation (Johnson, 2018, 102-103).

The IMO has been instrumental in developing conventions and instruments that aim to safeguard the human rights of seafarers. Notable among these is the International Labour Organization's Maritime Labour Convention (MLC), 2006. The MLC establishes minimum standards for living and working conditions on board ships, ensuring seafarers' rights to fair treatment, decent working conditions, and access to medical care (ILO, 2006, 27). Additionally, the IMO has addressed the specific needs of seafarers through conventions like the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and the Seafarers' Identity Documents Convention (IMO, 2019, 14).

The outbreak of the COVID-19 pandemic in 2019 posed unprecedented challenges to the maritime industry and further highlighted the vulnerabilities of seafarers. Stranded at sea due to travel restrictions and quarantine measures, seafarers faced prolonged contracts, mental health issues, and limited access to medical care (Brown, 2020, 77). The IMO responded promptly by issuing guidelines and recommendations to member states, emphasizing the need to recognize seafarers as essential workers, and facilitating crew changes to alleviate their plight (IMO, 2020, 3-4).

Recognizing the mental health challenges faced by seafarers, the IMO has actively advocated for increased awareness and support. The isolation, stress, and demanding nature of their work can contribute to mental health issues, making it imperative to address this aspect of seafarers' well-being (Green, 2021, 88). The IMO's initiatives include promoting mental health awareness campaigns, providing guidance for shipping companies, and encouraging member states to incorporate mental health support into their maritime policies (IMO, 2021, 12-13).

The International Maritime Organization plays a pivotal role in safeguarding the human rights of seafarers. Through the establishment of conventions, guidelines, and initiatives, the IMO addresses the unique challenges faced by seafarers and strives to create a maritime environment that prioritizes their well-being. As the maritime industry continues to evolve, the IMO's commitment to upholding the rights of seafarers remains crucial in fostering a sustainable and humane global shipping sector (Williams, 2019, 96). It is essential for all stakeholders, including governments, shipping companies, and international organizations, to collaborate in implementing and enforcing these measures to ensure the dignity and rights of seafarers are upheld worldwide (Anderson, 2020, 110).

2.4.2 IMO and the Access to Shore-based Medical Care

Shore-based medical care is a critical aspect of ensuring the health and well-being of seafarers. Given the nature of their work and the often-challenging conditions at sea, seafarers may encounter various health issues, injuries, or

emergencies that require prompt and effective medical attention. Shore-based medical care refers to the medical services provided to seafarers when they are on land, either during port visits or in the case of medical emergencies that necessitate evacuation from the ship.

Port Health Services:

During port visits, seafarers have access to port health services, which may include medical facilities, clinics, or hospitals. These services are responsible for conducting health inspections, providing medical assistance, and ensuring compliance with health regulations.

Medical Examinations and Certificates:

Seafarers are often required to undergo pre-employment medical examinations to ensure they are fit for the demands of maritime work. Additionally, regular medical examinations may be mandated by international conventions, such as the International Labour Organization's Maritime Labour Convention (MLC), to monitor and maintain seafarers' health standards (ILO, 2021, 89-90).

Emergency Medical Evacuation:

In the event of serious illness or injury that cannot be adequately addressed on board, shore-based medical care includes arranging for the evacuation of seafarers to the nearest medical facility on land. This may involve coordination between the ship's crew, shipping company, and relevant authorities to ensure a swift and safe evacuation.

Telemedicine Services:

Advances in technology have facilitated the use of telemedicine services, allowing seafarers to consult with healthcare professionals remotely. Shore-based medical practitioners can provide guidance, advice, and even diagnosis through video calls or other telecommunication methods, reducing the need for immediate evacuation in some cases (Garcia, 2022, 78).

Public Health Measures:

Shore-based medical care also encompasses public health measures aimed at preventing the spread of diseases. This is particularly relevant in the context

of global health crises, such as the COVID-19 pandemic, where port health authorities may implement screening, testing, and quarantine measures to protect both seafarers and the local population.

Training and Education:

Shore-based medical care involves providing training and education to seafarers on health and hygiene practices. This includes information on preventing common illnesses, managing chronic conditions, and promoting overall well-being. Training programs may be conducted by maritime health organizations or port health services.

Collaboration with Maritime Organizations:

Shore-based medical care is often a collaborative effort involving maritime organizations, governments, and international bodies. The IMO, in coordination with the World Health Organization (WHO) and other relevant agencies, establishes guidelines and recommendations for ensuring the provision of adequate medical care for seafarers (IMO, 2019, 67-68).

Post-Employment Health Services:

After seafarers complete their contracts and return to shore, they may still require medical attention for any lingering health issues. Shore-based medical care extends to post-employment health services, ensuring that seafarers receive the necessary follow-up care and support.

The shore-based medical care is an integral component of the comprehensive healthcare system for seafarers. By providing access to medical services, emergency evacuation procedures, and preventive measures, shore-based medical care contributes significantly to maintaining the health and safety of seafarers both at sea and on land. This approach aligns with the broader goal of the maritime industry and international organizations to prioritize the well-being and human rights of seafarers (Davis, 2021, 38-39).

3 MEDICAL EVACUATION AT SEA

3.1 The Medical Evacuation at Sea According to Present Regulations

International regulations and standards are set by organizations such as the International Maritime Organization (IMO) and the International Labour Organization (ILO).

The International Convention for the Safety of Life at Sea (SOLAS) is a key international treaty that sets minimum safety standards for ships, including provisions for medical facilities and arrangements for medical evacuation. Additionally, the Maritime Labour Convention (MLC) addresses the health and safety of seafarers, including medical care on board and access to shore-based medical facilities.

Ships are usually required to carry medical supplies and have trained personnel to provide initial medical care. The level of medical facilities on board depends on the type and size of the vessel.

Efficient communication and coordination between the ship, medical personnel on board, and onshore medical facilities are crucial. This may involve using radio communication, satellite communication, or other means to request assistance and coordinate the evacuation.

Ships are often required to have emergency plans in place, including procedures for medical evacuation. This includes identifying appropriate methods for transferring a patient from the ship to a medical facility ashore.

In some cases, medical evacuation may be part of a broader search and rescue operation. International conventions and agreements, such as the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, provide guidance on search and rescue procedures.

Ships are subject to regulations imposed by the flag state (the country where the ship is registered) and may also be subject to regulations in the ports they visit. These regulations may include specific requirements for medical facilities and evacuation procedures.

It's important for shipowners, operators, and crew members to be familiar with the specific regulations that apply to their vessel and routes. They should also be prepared to follow established procedures and guidelines in the event of a medical emergency at sea. Additionally, consulting the latest versions of international conventions and guidelines is advisable to ensure compliance with current regulations.

3.1.2 Intergovernmental Cooperation in Medical Evacuation at Sea Cases

Intergovernmental cooperation plays a critical role in facilitating and coordinating medical evacuations at sea. Several international conventions, agreements, and organizations are involved in establishing the framework for such cooperation.

The IMO has developed several international conventions that address safety, security, and environmental aspects of shipping, including medical facilities and medical care on board. The SOLAS convention, in particular, contains provisions related to medical requirements and arrangements for medical evacuation.

The International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual provides guidance on coordinating search and rescue operations. In the context of medical evacuations, SAR coordination involves communication between the distressed vessel, rescue coordination centres, and other relevant authorities. This coordination helps ensure timely and effective response to medical emergencies at sea.

The first step in any SAR operation is the receipt of a distress message. Distressed vessels or individuals can communicate their emergency situation through various means, such as radio communication, satellite communication, emergency beacons (EPIRBs), or other signalling devices.

SAR coordination relies on the accurate and prompt transmission of distress information. SAR coordination is typically centralized through Rescue Coordination Centres (RCCs), which may be operated by coastal states or regional organizations. These centres serve as hubs for receiving distress alerts, coordinating response efforts, and managing resources. RCCs are responsible for assessing the situation, determining the appropriate response, and initiating or coordinating search and rescue operations.

These operations often require international coordination, especially in the case of incidents occurring in international waters or involving vessels from different flag states. The International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual provides guidelines for the coordination of SAR activities on a global scale.

Search and Rescue coordination involves the efficient allocation of resources, including search and rescue vessels, aircraft, and medical facilities. Coordination centres must assess the severity of the medical emergency, the number of individuals involved, and the location of the incident to deploy resources effectively. Also, the operation may involve obtaining medical advice and support to assess the condition of individuals in distress and provide guidance on necessary medical interventions. This may include coordinating with onshore medical professionals or utilizing telemedicine capabilities to assess the medical situation remotely.

In cases where medical evacuation is necessary, SAR coordination includes planning and organizing the evacuation process. This involves identifying appropriate means of transportation, such as helicopters, rescue boats, or other vessels equipped with medical facilities, and ensuring a safe and timely transfer of individuals to appropriate medical facilities ashore.

Effective communication is crucial during SAR operations. Coordination centres must communicate with the distressed vessel, responding assets, relevant authorities, and any onshore medical facilities involved. Clear and accurate information exchange helps streamline the response efforts.

SAR coordination may involve navigating legal and diplomatic aspects, especially in cases where individuals need to be evacuated across borders. This includes obtaining necessary permissions, coordinating with relevant authorities, and ensuring compliance with international and national laws.

Various regional agreements and organizations exist to enhance maritime safety and security. These entities often facilitate intergovernmental cooperation for medical evacuations within specific geographical regions. Examples include regional search and rescue organizations and agreements that outline procedures for assistance in emergency situations.

Once individuals are evacuated, SAR coordination includes providing information to relevant authorities, conducting debriefings, and ensuring that any necessary post-evacuation medical care is arranged.

Overall, SAR coordination is a complex and collaborative process that involves multiple stakeholders, including maritime authorities, coast guards, naval forces, aviation authorities, and medical professionals. The effectiveness of SAR coordination significantly influences the success of medical evacuations at sea and contributes to the overall safety of maritime activities.

Some countries enter into bilateral or multilateral agreements to facilitate cooperation in emergency situations, including medical evacuations. These agreements may define the roles and responsibilities of involved parties, as well as procedures for requesting and providing assistance.

Efficient communication is essential during a medical evacuation. Intergovernmental cooperation ensures that relevant information is shared promptly between the distressed vessel, coastal authorities, and other stakeholders. This communication helps coordinate the response and arrange for the necessary resources, such as medical facilities and transportation.

Intergovernmental cooperation in the context of medical evacuations reflects a commitment to humanitarian principles. It involves a shared understanding of the importance of providing prompt and effective medical assistance to individuals in distress at sea, irrespective of their nationality or the flag state of the vessel.

States are bound by international conventions and treaties that outline obligations related to safety, security, and protection of life at sea. Compliance with these agreements reinforces the importance of intergovernmental cooperation in responding to medical emergencies and conducting safe evacuations.

4 MEDICAL EVACUATION ISSUES DURING COVID-19

4.1 Infection risks to medical personnel

Medical personnel face several infection risks during medical evacuation (medevac) at sea. These risks stem from the challenging and variable conditions of the maritime environment, as well as the inherent dangers of handling potentially infectious patients. Key points to consider include:

Limited Medical Facilities:

At sea, medical facilities are often limited and may lack comprehensive infection control measures. This limitation increases the risk of exposure to infectious diseases for medical personnel during patient care and transport (Smith, 2020, 45).

Environmental Challenges:

The maritime environment can complicate infection control efforts due to confined spaces, limited access to medical supplies, and the necessity of operating in potentially adverse weather conditions. These factors make it difficult to maintain sterile conditions and manage waste disposal properly.

Infectious Disease Transmission:

Common routes of infection transmission in medevac scenarios include airborne, droplet, and contact transmission. The risk is particularly high for diseases like tuberculosis, influenza, and COVID-19, where close proximity to the patient during transport can facilitate the spread of pathogens.

Personal Protective Equipment (PPE):

The use of PPE is critical to protect medical personnel. However, the effectiveness of PPE can be compromised by the operational environment at sea. Challenges include donning and doffing PPE in tight spaces, PPE degradation due to exposure to saltwater and environmental conditions, and limited resupply options during extended missions (Taylor, 2018, 34-35).

Patient Handling and Procedures:

Procedures such as intubation, suctioning, and resuscitation can generate aerosols, increasing the risk of airborne transmission of infectious agents. Ensuring proper technique and use of barriers during these procedures is essential to minimize risk (Wilson & Garcia, 2020, 102).

Training and Preparedness:

Ongoing training for medical personnel on infection control protocols and the correct use of PPE is vital. Simulations and drills specific to the maritime environment can help personnel better prepare for the unique challenges they may face during medevac operations at sea (Adams et al., 2019, 89).

4.2 Quarantine and isolation requirements

During the COVID-19 pandemic, quarantine and isolation requirements on ships were crucial to prevent the spread of the virus. These protocols were guided by the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), and other maritime health authorities. Here are the general guidelines and practices that were followed:

Quarantine was used to keep individuals who might have been exposed to COVID-19 away from others to see if they became symptomatic. The recommended quarantine period was typically 14 days, based on the virus's incubation period, though this could be adjusted based on testing and risk assessments (CDC, 2020, 12; WHO, 2020, 23).

Crew members and passengers who were identified as close contacts of a confirmed COVID-19 case were required to quarantine in their cabins (CDC, 2020, 14). Meals and essential supplies were delivered to the cabin door to minimize contact. Regular health checks, including temperature screenings and symptom monitoring, were conducted. PCR or rapid antigen tests were often used to determine the presence of the virus.

Isolation was for individuals who tested positive for COVID-19 or showed symptoms. Isolation continued until the person was no longer considered

contagious, usually after at least 10 days from symptom onset and 24 hours without fever without the use of fever-reducing medications. Infected individuals were isolated in their cabins or designated isolation rooms with private bathrooms. Enhanced personal protective equipment (PPE) was used by any crew member interacting with isolated individuals.

Ships with medical facilities provided in-cabin medical consultations and care. Severe cases might require evacuation to onshore medical facilities if necessary (CDC, 2020, 20).

General Preventive Measures:

- Passengers and crew were screened for symptoms and potential exposure to COVID-19 before boarding.
- Enhanced cleaning and disinfection procedures were implemented.
- Social distancing measures were enforced in common areas.
- Masks were required in public spaces.
- Regular communication with passengers and crew about health protocols.
- Training for crew members on infection control practices and use of PPE.

4.3 Logistical challenges

Medical evacuations at sea during the COVID-19 pandemic posed several logistical challenges that complicated both the execution and safety of such operations.

The pandemic significantly increased the demand for medical evacuations due to the heightened risk of outbreaks in confined environments like ships. This surge in demand often outpaced the available resources, leading to delays and difficulties in managing the logistics of patient transport.

One of the primary concerns was the risk of COVID-19 transmission to medical personnel and other patients. Aeromedical evacuation teams had

to implement stringent protocols to minimize exposure. This included using personal protective equipment (PPE), creating safe transition zones within aircraft, and ensuring proper ventilation systems to reduce airborne transmission risks.

Evacuation protocols had to be adapted to account for COVID-19-specific requirements. For instance, the Service d'évacuations aéromédicales du Québec implemented boarding procedures where uncontaminated personnel boarded through the front of the aircraft, while patients and treating medical staff used the cargo door. Such measures were crucial to maintain a controlled environment and reduce cross-contamination risks.

Medical evacuations from cruise ships were particularly challenging due to the confined spaces and the high density of people on board. The CDC highlighted that outbreaks on cruise ships required quick and coordinated evacuation efforts to manage both COVID-19 and other health risks. Cruise lines had to establish rigorous health protocols, including testing, isolation, and treatment facilities, to handle potential outbreaks until evacuation was possible.

Effective medical evacuations required clear and constant communication between the ship's medical team, evacuation services, and receiving healthcare facilities. This coordination ensured that resources were appropriately allocated and that patients received timely care upon arrival at medical facilities.

Navigating the regulatory environment during the pandemic added another layer of complexity. International evacuations, in particular, faced challenges due to varying entry restrictions, quarantine requirements, and the need for rapid regulatory approvals to facilitate timely evacuations.

Overall, these logistical challenges necessitated significant adjustments and innovations in the protocols for medical evacuations at sea during the COVID-19 pandemic. Enhanced coordination, strict infection control measures, and adaptable operational procedures were key to overcoming these hurdles and ensuring the safety of both patients and medical personnel.

4.4 Strain on medical resources

The COVID-19 pandemic brought about significant challenges for medical evacuations at sea, leading to a substantial strain on medical resources. This strain was multifaceted, affecting various aspects of the evacuation process and healthcare systems.

The pandemic created a surge in demand for aeromedical evacuations due to the increased number of COVID-19 cases in remote and maritime locations. Medical evacuations at sea became more frequent as ships, including commercial vessels and cruise ships, reported cases of COVID-19. This demand often exceeded the available capacity of aeromedical services, which had to manage not only COVID-19 patients but also those with other critical medical conditions. The need for rapid and safe transfer of patients from ships to healthcare facilities strained the logistical capabilities and readiness of these services.

The operational complexity of medical evacuations at sea increased significantly during the pandemic. Aircraft used for these evacuations had to be modified to ensure safe transport, with strict segregation between contaminated and uncontaminated zones. For example, specific boarding protocols were implemented where uncontaminated personnel boarded through the front door, while patients and treating medical staff boarded through the cargo door. This segregation was crucial to minimize the risk of virus transmission during transport.

Additionally, the coordination between different entities, including maritime authorities, healthcare providers, and aeromedical services, became more challenging. Effective communication and clear protocols were essential to manage the evacuation process efficiently and safely. This included the need for detailed planning and the availability of appropriate medical equipment and supplies on board evacuation aircraft.

Hospitals receiving patients from medical evacuations faced tremendous strain. The increased number of critically ill patients, both COVID-19 and

non-COVID-19, led to high occupancy rates in intensive care units (ICUs). According to the CDC, ICU bed occupancy rates above 80% were common during peak pandemic periods, indicating severe strain on hospital resources. This high occupancy rate was associated with increased excess deaths, as healthcare systems struggled to provide adequate care for all patients.

The influx of evacuated patients also disrupted normal hospital operations, leading to delays in non-emergency treatments and surgeries. Hospitals had to reallocate resources and staff to manage the surge in COVID-19 cases, further exacerbating the strain on the healthcare system.

Ensuring the safety of medical personnel during evacuations was a critical concern. The risk of virus transmission during close contact in confined spaces such as aircraft required stringent infection control measures. Personal protective equipment (PPE) was essential, and medical personnel needed specialized training to handle COVID-19 patients safely. Continuous monitoring and updating of safety protocols were necessary to adapt to the evolving understanding of the virus and its transmission.

4.5 Testing and diagnosis

Testing and diagnosis of COVID-19 for medical evacuations at sea involve several key protocols and technologies to ensure the safety of individuals onboard maritime vessels. Given the constraints of being at sea, there are specialized approaches to managing potential COVID-19 cases.

Individuals are often required to provide proof of a negative PCR or observed antigen test within 72 hours before boarding. This is to minimize the risk of introducing COVID-19 onto the vessel.

Surveillance testing continues while at sea, including routine checks and rapid testing if symptoms arise. This helps in early detection and isolation of cases to prevent outbreaks.

Telemedicine has become an invaluable tool, allowing real-time consultations with medical professionals onshore. This can include video conferencing for symptom evaluation and guidance on treatment, reducing the need for immediate evacuations unless absolutely necessary (MDPI).

Telemedical Assistance Service (TMAS): Centers provide 24/7 support to ships at sea, utilizing satellite communications to offer medical advice, which has significantly improved the quality of care and reduced response times for medical emergencies.

When evacuation is necessary, protocols involve coordination with local health authorities and use of dedicated medical evacuation resources such as helicopters or boats equipped for patient transport. This ensures that individuals receive timely and appropriate care.

Ships must have plans in place for handling severe cases of COVID-19, which include isolation procedures and readiness for rapid medical evacuation if the patient's condition deteriorates.

Many maritime programs mandate full vaccination for all crew and passengers to reduce the risk of outbreaks. Booster doses are also encouraged to maintain high levels of immunity among the ship's population.

Regular sanitization, mask-wearing during certain activities, and monitoring of symptoms are standard practices to prevent the spread of COVID-19 onboard.

These measures are part of comprehensive safety and health protocols designed to manage the unique challenges of medical care and evacuations at sea during the COVID-19 pandemic. They highlight the importance of preparedness, remote medical support, and strict testing and vaccination policies to safeguard those at sea.

4.6 Transport challenges

During the COVID-19 pandemic, medical evacuations at sea faced a myriad of transport challenges. These challenges were multifaceted and involved logistical, operational, and safety concerns.

The pandemic led to a reduction in the availability of ships and aircraft for medical evacuations due to travel restrictions and quarantine measures.

Coordination Between Agencies: Coordination between different countries' coast guards, navies, and private rescue organizations became more complex due to varying COVID-19 protocols and restrictions.

Necessary medical supplies, including personal protective equipment (PPE) and ventilators, faced significant supply chain disruptions, complicating the preparation and execution of medical evacuations.

Ensuring infection control during the evacuation process was paramount. This included the need for specialized equipment and procedures to prevent the spread of the virus during transport.

Emergency responders required additional training on COVID-19 protocols, including the use of PPE, patient handling, and decontamination procedures.

Implementing testing and quarantine measures for both the evacuees and the rescue personnel was challenging and time-consuming, often delaying evacuations.

The safety of the medical and rescue teams was a primary concern, as they were at high risk of exposure to the virus. This necessitated stringent health monitoring and the provision of appropriate PPE.

The risk of viral transmission during transport, especially in confined spaces like aircraft or small vessels, posed significant challenges.

Response times were often delayed due to the additional precautions and procedures needed to safely carry out medical evacuations during the pandemic.

Differing international regulations and travel restrictions impacted the movement of rescue teams and patients across borders. Rapidly changing policies regarding travel, quarantine, and testing requirements required constant updates and adaptability from evacuation teams.

Many patients requiring evacuation had severe COVID-19 symptoms, necessitating advanced life support measures during transport, which are challenging to provide in a maritime environment. Managing evacuations involving multiple patients with COVID-19 symptoms posed additional challenges in terms of space, medical resources, and personnel safety.

Effective communication between ships, rescue teams, medical facilities, and regulatory bodies was critical but often hindered by the rapidly changing situation and remote locations. The spread of misinformation about COVID-19 could cause panic and complicate the coordination and execution of evacuations.

In summary, medical evacuations at sea during the COVID-19 pandemic required meticulous planning and coordination to address the myriad challenges presented by the pandemic. Enhanced protocols for infection control, robust training for emergency responders, and flexible logistical and operational strategies were essential to overcoming these challenges and ensuring the safety of both patients and rescue personnel.

4.7 Communication and coordination challenges

During the COVID-19 pandemic, medical evacuations at sea faced unprecedented and multifaceted challenges, impacting communication, coordination, operational constraints, and psychosocial factors. The complexity of these evacuations was exacerbated by the need to adhere to stringent

health protocols while navigating the logistical hurdles presented by the maritime environment.

One of the primary challenges was ensuring accurate and timely information sharing. The need for prompt dissemination of information regarding COVID-19 status, patient condition, and evacuation logistics was crucial. Any delays or misinformation could significantly hinder the evacuation process. The coordination efforts involved multiple entities, including ship crews, medical teams, rescue services, port authorities, and health organizations. Effective communication between these varied groups was often challenging due to differing communication protocols and platforms.

Language barriers further complicated communication. Ships typically have multinational crews, which can lead to significant language barriers. Miscommunication, due to these language differences, could result in critical misunderstandings during emergency evacuations, potentially jeopardizing the safety and efficiency of the operation.

Moreover, the maritime environment often suffers from limited or unstable internet and communication infrastructure. This lack of reliable connectivity complicated real-time information exchange, which is essential during medical emergencies. Different stakeholders might use varied communication platforms and protocols, leading to compatibility issues and further hindering effective communication.

Coordination efforts were also significantly impacted by logistic complexities. Evacuating potentially COVID-19 positive patients required strict adherence to isolation and quarantine protocols, complicating coordination efforts. Ensuring the availability and proper use of personal protective equipment (PPE) for all involved in the evacuation process was essential but logistically challenging. The procurement, distribution, and correct usage of PPE added layers of complexity to the already demanding evacuation process.

International regulations and compliance posed another significant hurdle. Each country had its own set of COVID-19 regulations and protocols, which were frequently changing. This variability made it difficult to coordinate

cross-border evacuations. Obtaining the necessary clearances from multiple jurisdictions could be time-consuming and bureaucratically complex, often delaying urgent medical evacuations.

Furthermore, many coastal regions and countries had healthcare systems that were already strained by the pandemic, limiting their capacity to handle additional emergency cases from the sea. The need to prioritize resources for medical evacuations while simultaneously managing local COVID-19 cases was a significant challenge. This strain on healthcare systems further complicated the coordination of medical evacuations at sea.

Operational constraints also played a critical role in the complexity of medical evacuations. Ships often lack advanced medical facilities and personnel, making it difficult to stabilize critically ill patients before evacuation. The limited medical capabilities aboard ships necessitated rapid and effective evacuations, which were often hampered by the lack of resources and trained personnel. Crew members might not be adequately trained for handling medical emergencies, particularly those involving infectious diseases like COVID-19, further complicating the situation.

Rescue and transport logistics required meticulous planning and coordination. Ensuring the safe transfer of patients from ship to rescue vessels and then to shore-based medical facilities was a complex process. Adverse weather and sea conditions could delay or complicate evacuation operations, adding another layer of difficulty. The need for precise timing and coordination between various entities was crucial to ensure the safety and health of both the patients and the rescue teams.

Finally, psychosocial factors significantly influenced the evacuation process. The fear of COVID-19 infection among crew and passengers could lead to panic and complicate evacuation efforts. The mental health of crew members, already isolated at sea, could be adversely affected by the additional stress of a medical evacuation during the pandemic. This increased anxiety and stress among crew members and passengers could potentially lead to delays and complications in the evacuation process.

The prolonged isolation and uncertainty faced by seafarers during the pandemic exacerbated mental health issues. The psychological toll of prolonged isolation, combined with the fear of infection and the stress of potential medical emergencies, could impair decision-making and operational efficiency. Addressing these psychosocial factors was crucial to maintaining the well-being of crew members and ensuring the smooth execution of medical evacuations.

4.8 Legal and regulatory issues

In response to the rapid global spread of COVID-19, countries implemented stringent travel bans and quarantine measures. While these restrictions were essential for mitigating virus transmission, they significantly hindered the execution of medical evacuations. Enhanced health screenings at borders and mandatory quarantine periods resulted in considerable delays and logistical complications, thus impeding the timely transfer of patients.

The pandemic underscored the critical importance of adhering to the International Health Regulations (2005), which are designed to prevent and respond to global health threats. Coordination with the World Health Organization (WHO) became indispensable for facilitating cross-border medical evacuations. Ensuring compliance with both the home and host countries' health regulations was essential to enable lawful and efficient evacuations, adding a layer of complexity to the process as medical teams navigated varying regulatory environments.

Safeguarding patient data confidentiality during evacuations became a paramount concern, necessitating strict adherence to regulations such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States and the General Data Protection Regulation (GDPR) in the European Union. The process of obtaining proper consents for sharing health data across borders grew increasingly complex under pandemic

conditions, requiring meticulous attention to regulatory compliance at every stage of the evacuation process.

Determining liability in cases of medical complications or death during evacuation presented significant challenges. The pandemic introduced new variables, complicating the assignment of clear responsibility. Ensuring that medical evacuation insurance covered COVID-19-related evacuations, which often involved complex and high-cost operations, emerged as a critical concern. Insurance policies required thorough review and adjustment to accommodate the new risks introduced by the pandemic.

Maintaining a consistent standard of care during transportation, comparable to that provided in medical facilities, was imperative. This necessitated the implementation and adherence to stringent emergency protocols for COVID-19 patients to prevent infection spread during evacuations. The retrofitting of air ambulances with specialized equipment, comprehensive training for medical personnel, and continuous updates to protocols based on the latest scientific guidance were essential measures to ensure a seamless continuum of care.

The limited availability of resources during the pandemic introduced ethical dilemmas in prioritizing patients for evacuation. Medical professionals faced challenging decisions about evacuation prioritization, often under immense pressure. Ensuring equitable access to medical evacuations and avoiding discrimination required careful ethical consideration, balancing individual patient needs against broader public health concerns.

Securing the necessary permits and clearances for air ambulances and medical personnel became a complex process during the pandemic. Each evacuation required a multitude of legal documents, including patient transfer agreements and liability waivers. Ensuring that all required documentation was in place was critical for the legality and efficiency of evacuations. Legal teams played a crucial role in navigating the dynamic regulatory landscape, often facing tight deadlines and high stakes.

Ensuring the safety and proper training of medical and flight crews handling COVID-19 patients was paramount. This involved procuring and utilizing

appropriate personal protective equipment (PPE) and other necessary medical supplies to ensure safe operations. The procurement process faced significant challenges due to disrupted global supply chains and increased demand for PPE. Additionally, rapid development and implementation of training programs were necessary to equip medical personnel with the skills needed to handle COVID-19 patients safely.

Effective medical evacuations required unprecedented levels of coordination between multiple government agencies, international organizations, and private entities. The rapidly evolving policies and regulations added to the complexity, necessitating constant communication and adaptation. Teams had to navigate a continuously changing landscape of guidelines and protocols, ensuring that medical evacuations proceeded smoothly despite the dynamic environment.

Managing the high costs associated with medical evacuations during the pandemic was a significant challenge. The increased need for specialized equipment, adherence to stringent protocols, and overall operational complexity drove costs higher. Securing funding and support from governments or international bodies was essential to sustain evacuation efforts. Financial teams worked diligently to source funding, often utilizing emergency reserves and seeking assistance from international organizations. The economic impact of the pandemic on medical evacuations was profound, highlighting the necessity for robust financial planning and support mechanisms.

4.9 Psychological impact on crew

The pandemic presented a unique set of stressors for seafarers, exacerbating existing issues and introducing new difficulties that profoundly affected their professional and personal lives.

The implementation of travel restrictions and port lockdowns during the pandemic led to protracted periods at sea for many seafarers, often extending beyond their contractual terms. This unprecedented scenario

exacerbated feelings of isolation and loneliness among crew members, who found themselves confined to their vessels for much longer than anticipated. The inability to take shore leave due to stringent quarantine measures further deprived seafarers of essential rest and recreation, compounding their psychological strain. Being unable to disembark, even when in port, meant that crew members missed out on vital opportunities to relax and mentally reset, which are crucial for maintaining their overall well-being.

The pandemic induced a pervasive sense of uncertainty regarding contract renewals, repatriation, and health concerns for both seafarers and their families. This uncertainty precipitated elevated levels of stress and anxiety among crew members. Many seafarers faced prolonged separations from their loved ones, creating a constant undercurrent of worry about the health and safety of their families back home. The omnipresent fear of contracting COVID-19 onboard, coupled with the limited medical facilities available on ships, intensified the anxiety experienced by these individuals. The lack of adequate medical support exacerbated concerns, as any outbreak on board a ship could quickly become unmanageable and life-threatening.

The operational challenges brought about by the pandemic often resulted in increased workloads due to understaffing, as crew changes were frequently delayed or cancelled. This scenario led to physical and mental fatigue among seafarers. Continuous work without adequate rest periods contributed to chronic fatigue, which in turn had a detrimental effect on their mental health. The additional tasks related to implementing and maintaining health and safety protocols against COVID-19 further added to their burden. The combination of prolonged working hours, heightened responsibilities, and insufficient rest periods created a perfect storm for burnout among seafarers.

Access to communication tools was severely restricted during the pandemic, with poor internet connectivity further exacerbating the issue. This limited seafarers' ability to maintain regular contact with their families, heightening feelings of disconnection and worry. Many seafarers relied on

periodic and brief communication windows, which were often insufficient for meaningful interaction. The disparity in internet facilities across ships created unequal opportunities for crew members to stay connected with their loved ones, contributing to a sense of inequity and isolation. The psychological impact of being cut off from support networks during such a stressful time cannot be overstated.

The scarcity of mental health professionals or support services available at sea meant that many seafarers were compelled to cope with their mental health issues without professional assistance. Additionally, the maritime industry's prevalent stigma associated with seeking mental health support further deterred individuals from pursuing help. The lack of anonymity and fear of being perceived as weak or unfit for duty often prevented seafarers from seeking the support they needed. This stigma, coupled with the isolation inherent in their profession, made it incredibly challenging for seafarers to address their mental health needs effectively.

In response to the growing psychological toll on seafarers, some shipping companies and organizations introduced mental health support programs. These initiatives included hotlines, virtual counselling, and wellness programs aimed at mitigating the psychological impact on their crew. Virtual counselling sessions provided a critical lifeline for many seafarers, offering them a confidential space to discuss their concerns and receive professional guidance. Additionally, there was an increased emphasis on mental health training and awareness, enabling crew members to recognize signs of mental distress and provide peer support. These efforts, while valuable, highlighted the need for systemic changes to better support the mental health of seafarers.

The prolonged exposure to high-stress situations during the pandemic may result in enduring psychological effects, such as post-traumatic stress disorder (PTSD). Returning to shore and reintegrating into normal life after extended periods at sea during a pandemic poses additional challenges, potentially leading to significant adjustment issues. Seafarers may experience difficulty readjusting to the rhythms of daily life and reconnecting with

their families and communities. The long-term psychological impact of the pandemic on seafarers underscores the importance of continued support and intervention to address these challenges and facilitate their reintegration into society.

4.10 Resource allocation

The global shipping and logistics sectors faced unprecedented disruptions, compelling stakeholders to adopt strategic resource allocation to ensure the continuity of essential services while addressing critical health and safety concerns.

In response to the pandemic, shipping companies had to restructure their priorities significantly. The transportation of critical medical supplies, including personal protective equipment (PPE), ventilators, and pharmaceuticals, became paramount. These items were vital for frontline healthcare workers and the overall public health response to the pandemic. Additionally, essential commodities such as food, household supplies, and hygiene products were prioritized to ensure continuous supply chains. This shift in priorities required meticulous planning and coordination to meet the heightened demand for these goods amidst the global crisis.

Ensuring the safety and health of crew members aboard ships became a critical focus. Ships arriving from high-risk regions were subjected to stringent quarantine procedures to prevent the spread of the virus. Crew members underwent rigorous testing and quarantine protocols as necessary, with isolation measures implemented for those exhibiting symptoms or testing positive. Enhanced health measures were enforced on board, including regular health checks, mandatory use of PPE, and rigorous sanitization practices. These measures were vital in maintaining the health of crew members and preventing outbreaks on vessels, which could further disrupt global supply chains.

Ports worldwide had to rapidly adapt to the new health and safety realities brought about by the pandemic. Contactless procedures for loading and

unloading cargo were implemented to minimize physical interactions and reduce infection risks. This included the use of automated systems and remote monitoring technologies to handle cargo with minimal human contact. Operations were streamlined with reduced staff and adjusted working hours to comply with new health regulations, ensuring the safety of all workers involved. Ports also had to coordinate closely with local health authorities to manage the flow of goods while adhering to quarantine and testing requirements for incoming vessels.

Shipping companies demonstrated remarkable flexibility in response to the dynamic and evolving conditions of the pandemic. Schedules were dynamically adjusted based on real-time data and changing pandemic conditions to optimize resource allocation. Vessels were rerouted to operational ports less affected by the pandemic to sustain supply chain integrity. This required close monitoring of global conditions and swift decision-making to navigate the disruptions caused by port closures, lockdowns, and changing regulations. The ability to quickly adapt and reroute shipments was crucial in maintaining the flow of essential goods and minimizing delays.

Governments and international organizations played a crucial role in supporting the shipping industry during the pandemic. They provided guidelines and support to help the industry navigate the unprecedented challenges. Financial aid and relief packages were offered to assist shipping companies facing economic hardships due to reduced demand and operational disruptions. International coordination was essential to ensure harmonized regulations and procedures across different regions, facilitating smoother operations and reducing administrative burdens on shipping companies. This collaborative effort helped stabilize the industry and maintain the flow of critical supplies globally.

The pandemic accelerated the adoption of digital platforms for documentation, communication, and tracking, ensuring efficient and safe operations. Remote monitoring and management systems were implemented to oversee ship operations without requiring physical presence, enhancing operational efficiency. The use of technology allowed for better coordination and

visibility across the supply chain, enabling stakeholders to respond quickly to changing conditions and emerging challenges. Digitalization also facilitated the implementation of contactless procedures and remote work, reducing the risk of infection and ensuring business continuity.

The pandemic highlighted the vulnerabilities in global supply chains and underscored the need for greater resilience. Companies diversified their supply chains to mitigate the risk of reliance on single sources and routes, thereby enhancing resilience against disruptions. Strategic stockpiling of essential goods was undertaken to buffer against potential supply chain delays and shortages. This involved building redundancy into supply chains and developing contingency plans to manage disruptions. The focus on resilience extended to enhancing supplier relationships, improving forecasting and demand planning, and investing in supply chain visibility and risk management tools.

5 EXAMPLES OF REJECTED OR DELAYED MEDICAL EVACUATIONS AT SEA DURING COVID-19

5.1 Diamond Princess

The Diamond Princess cruise ship became an infamous early site of the COVID-19 pandemic. The outbreak aboard the ship and the subsequent medical evacuation efforts provided critical insights into managing infectious disease outbreaks in confined settings.

The Diamond Princess embarked on a cruise that was initially uneventful until a passenger who disembarked in Hong Kong on January 20, 2020, tested positive for COVID-19. Unaware of the impending crisis, the ship continued its journey, docking in Yokohama, Japan, on February 3, 2020. Japanese health authorities soon discovered that the virus had spread on board, prompting a quarantine of the ship with approximately 3,700 passengers and crew members on board.

Upon confirmation of the outbreak, Japanese health officials initiated testing for all passengers and crew. Those who tested positive for COVID-19 were isolated and transferred to medical facilities in Japan. This initial phase of the response was marked by urgent medical evacuations for passengers requiring immediate medical care due to the severity of their symptoms.

The close quarters and shared facilities on the cruise ship made it challenging to contain the virus's spread. Despite efforts to quarantine infected individuals, over 700 people on board tested positive for COVID-19, making it one of the largest outbreaks outside of China at the time. The Japanese government and Princess Cruises worked together to provide medical care, food, and other necessities to those quarantined on the ship.

As the situation escalated, several countries, including the United States, Canada, Australia, and others, organized repatriation efforts for their citizens. These countries chartered flights to evacuate their nationals, who were then subjected to additional quarantine measures upon arrival in their home

countries. For instance, the United States evacuated over 300 of its citizens, who were then quarantined for 14 days at military bases.

Coordinating the evacuation of thousands of individuals posed significant logistical challenges. Each evacuated passenger required screening, safe transportation, and additional quarantine. The process needed meticulous planning to prevent further spread of the virus and to ensure that evacuees received necessary medical attention during transit.

5.2 Costa Luminosa

The Costa Luminosa case became emblematic of the challenges faced by cruise ships in managing COVID-19 outbreaks and securing medical evacuations. The saga of the Costa Luminosa, which began as a routine transatlantic voyage, quickly turned into a harrowing journey marked by illness, uncertainty, and rejection from ports.

The Costa Luminosa set sail from Fort Lauderdale, Florida, on March 5, 2020, embarking on a transatlantic cruise with stops in the Caribbean before heading to Europe. The passengers, unaware of the impending global pandemic, anticipated a pleasant journey across the Atlantic. However, as the ship navigated through the Caribbean, the first signs of trouble emerged. Passengers began exhibiting symptoms that would soon be identified as COVID-19, a virus that was rapidly spreading across the globe.

The situation escalated when the Costa Luminosa docked in San Juan, Puerto Rico, on March 8, 2020. Three passengers with severe symptoms were disembarked and hospitalized, later confirmed to have contracted COVID-19. This incident marked the beginning of a series of challenges that the ship would face as it continued its journey. As the number of symptomatic individuals onboard increased, the ship found itself increasingly isolated, with ports in Spain and Italy refusing entry due to fears of contagion.

The conditions onboard deteriorated rapidly. The ship's medical facilities were soon overwhelmed, and the need for medical evacuations became urgent. Despite the dire situation, the Costa Luminosa faced multiple rejections from ports

unwilling to accept potentially infected passengers and crew. This left the vessel in a state of limbo, navigating the seas with limited options for assistance. The rejection from ports highlighted the broader issues of coordination and preparedness that the global community was grappling with during the early stages of the pandemic.

After several days of uncertainty and deteriorating health conditions, the Costa Luminosa was finally allowed to dock in Marseille, France, on March 19, 2020. The disembarkation process was conducted under strict health protocols to mitigate the risk of further spreading the virus. Passengers who were severely ill were immediately transferred to local hospitals for treatment, while others were placed in quarantine. Despite these efforts, a significant number of passengers tested positive for COVID-19, and tragically, some succumbed to the virus either onboard or shortly after disembarking.

The crew members of the Costa Luminosa also faced significant risks. Many remained quarantined on the ship even after passengers had disembarked, and Costa Cruises had to navigate the complex process of repatriating crew members amid global travel restrictions. The incident underscored the vulnerabilities of crew members who often faced extended periods of uncertainty and risk during such crises.

The Costa Luminosa incident occurred against the backdrop of a rapidly evolving global pandemic. Countries were implementing stringent border controls and port restrictions in an attempt to curb the spread of COVID-19, often leaving cruise ships without support or clear guidance. This lack of international coordination and preparedness was a critical issue, as ships like the Costa Luminosa found themselves caught in the crossfire of emerging health protocols and fear of contagion.

The repercussions of the Costa Luminosa's ordeal were far-reaching. The incident drew intense scrutiny on the cruise industry's preparedness and response to pandemics. There were widespread calls for better health protocols, emergency preparedness, and international cooperation to manage such crises in the future. The cruise industry had to reassess its health and safety

measures, leading to significant changes in how cruises were operated post-pandemic.

5.3 Grand Princess

The Grand Princess event unfolded in early 2020, shortly after the first major cruise ship outbreak on the Diamond Princess, highlighting the vulnerability of cruise ships during the pandemic.

The Grand Princess departed from San Francisco on February 21, 2020, for a round-trip voyage to Hawaii. During this trip, several passengers and crew members exhibited symptoms of COVID-19. It was later revealed that passengers from the ship's previous voyage had tested positive for the virus, which likely facilitated the outbreak on the current trip.

Upon the ship's return to California, it was denied immediate docking and held off the coast while testing was conducted. On March 5, health officials began testing symptomatic passengers and crew members. The results confirmed multiple COVID-19 cases onboard, prompting a significant public health response.

The U.S. government coordinated a complex evacuation plan. On March 9, the Grand Princess was allowed to dock in the Port of Oakland. Passengers were disembarked in stages to minimize the risk of further transmission. The most vulnerable individuals, including the elderly and those with pre-existing conditions, were prioritized.

Evacuated passengers were transported to military bases and quarantine facilities across the country, including Travis Air Force Base, Joint Base San Antonio-Lackland, and Dobbins Air Reserve Base. These measures were necessary to ensure thorough testing and isolation before passengers could return to their communities. Crew members remained onboard for additional testing and quarantine before being allowed to disembark and eventually repatriated to their home countries.

The incident underscored the challenges of managing COVID-19 on cruise ships, which are particularly susceptible to outbreaks due to their closed environments and high density of people. The Grand Princess evacuation led to stricter health protocols for the cruise industry, including enhanced screening procedures, mandatory quarantines, and the suspension of cruise operations for several months.

This event highlighted the necessity of robust public health responses and international cooperation during health crises. It also demonstrated the importance of preparedness and rapid response strategies in mitigating the spread of infectious diseases. The cruise industry's handling of the Grand Princess outbreak provided valuable insights into the measures needed to protect public health in similar scenarios.

5.4 MS Zaandam

The MS Zaandam departed from Buenos Aires, Argentina, on March 7, 2020, for a South American cruise. Initially, the voyage proceeded without incident. However, on March 22, several passengers and crew members began exhibiting flu-like symptoms and testing soon confirmed COVID-19 infections on board. As the virus spread, the ship's medical facilities became overwhelmed, leading to the deaths of four passengers and numerous others falling severely ill.

As the situation escalated, the MS Zaandam was denied entry to multiple ports, including those in Chile, Peru, and Argentina. These denials were part of broader efforts by countries to protect their populations from the spreading pandemic, but they left the ship stranded at sea with an increasing number of sick individuals on board. The need for medical assistance became critical, and the ship's crew and passengers faced growing uncertainty and fear.

In response to the crisis, Holland America Line dispatched a sister ship, the MS Rotterdam, to provide assistance. On March 28, 2020, healthy passengers from the MS Zaandam were transferred to the MS Rotterdam under strict health protocols designed to prevent further spread of the virus. This transfer

helped alleviate the overcrowded conditions on the MS Zaandam and allowed for better medical care for those remaining.

The plight of the MS Zaandam attracted international attention and required diplomatic negotiations involving multiple countries and health authorities. The United States played a key role in facilitating the ship's passage through the Panama Canal and its eventual docking in Florida. After extensive discussions, it was agreed that the MS Zaandam and the MS Rotterdam would dock at Port Everglades in Fort Lauderdale, Florida, on April 2, 2020.

Upon arrival, a team of medical professionals, including officials from the Centers for Disease Control and Prevention (CDC), boarded the ships to assess the health of passengers and crew. Those who were critically ill were immediately transported to local hospitals for treatment. Meanwhile, healthy passengers were quickly repatriated to their home countries via chartered flights and other transportation arranged by Holland America Line.

The MS Zaandam case remains a critical example of how quickly a localized health issue can escalate into an international crisis. It has prompted a re-evaluation of health and safety standards in the cruise industry and contributed to broader discussions on pandemic preparedness and response.

5.5 Ruby Princess

The Ruby Princess embarked on a round-trip cruise to New Zealand from Sydney on March 8, 2020. During the voyage, several passengers and crew members began exhibiting flu-like symptoms. Despite these warning signs, the ship continued its course without implementing stringent health checks or quarantine measures (Australian Government Department of Health, 2020).

On March 19, 2020, the Ruby Princess docked in Sydney. Alarmingly, passengers were allowed to disembark without mandatory quarantine or comprehensive health screenings, despite reports of illness on board. This oversight led to a significant number of passengers subsequently testing positive for COVID-

19, spreading the virus to various locations and exacerbating the public health crisis in Australia.

Initial health measures on the Ruby Princess were inadequate. Only symptomatic passengers were tested, and the results were not immediately available. The reliance on health declarations proved insufficient given the asymptomatic transmission potential of COVID-19. In response to the outbreak, New South Wales Health issued alerts urging recent passengers to self-isolate and undergo testing.

On-board quarantine measures were implemented for the remaining crew and a few passengers who stayed on the Ruby Princess. Coordinated efforts were made to medically evacuate seriously ill individuals to hospitals, ensuring their safe transfer and treatment. However, these actions came after the virus had already spread significantly.

The mishandling of the Ruby Princess disembarkation prompted official inquiries. The New South Wales government launched an investigation, uncovering significant lapses in communication and decision-making processes that contributed to the outbreak's severity. The inquiry criticized both the cruise operator and health officials for failing to adequately screen and quarantine passengers.

Legal repercussions followed, with several lawsuits filed by affected passengers and their families, alleging negligence by Princess Cruises and health authorities. These legal actions aimed to hold accountable those responsible for the preventable spread of the virus.

The Ruby Princess incident had far-reaching implications for public health and the cruise industry. In response, the cruise industry implemented stricter health and safety protocols, including pre-boarding screenings, on-board testing, enhanced cleaning procedures, and designated quarantine areas. Collaboration with health authorities became more stringent to ensure a rapid response to health emergencies.

The economic impact was substantial. The global cruise industry faced significant operational challenges, with many ships suspending operations. The incident highlighted the need for better preparedness and response frameworks in the travel and tourism sectors. The cruise industry worked on rebuilding trust with travelers through enhanced health measures and flexible booking policies.

6 STRATEGIES AND SOLUTIONS

The COVID-19 pandemic has brought to light significant vulnerabilities in the maritime industry, particularly regarding the health and safety of seafarers and passengers. Medical evacuations at sea have presented substantial challenges, highlighting the urgent need for comprehensive measures to prevent such emergencies. This chapter delves into detailed strategies and solutions to mitigate medical crises on maritime vessels during pandemics, focusing on health screening, onboard medical facilities, telemedicine, improved communication, international collaboration, research, regulatory frameworks, emergency response plans, infrastructure investment, and public health education.

Enhanced Health Screening and Quarantine Protocols

Implementing rigorous health screening and quarantine protocols is crucial in preventing the spread of infectious diseases aboard ships. All individuals boarding maritime vessels should undergo thorough health screenings, including temperature checks, symptom assessments, and diagnostic testing where necessary. Quarantine periods must be strictly enforced for those displaying symptoms or having recent exposure to infections, ensuring they do not interact with the general ship population until cleared by medical personnel. This approach not only safeguards the health of those on board but also prevents potential outbreaks.

Onboard Medical Facilities and Training

Ships must be equipped with adequate medical facilities to manage potential outbreaks effectively. This includes isolation rooms, ventilators, and essential medical supplies such as medications and personal protective equipment (PPE). Furthermore, crew members should receive specialized training in handling infectious diseases and performing emergency medical procedures. Such preparation can significantly reduce the need for medical evacuations by ensuring that immediate and appropriate care is available onboard.

Telemedicine and Remote Support

Telemedicine offers a viable solution for providing medical consultations and support remotely, thereby reducing the necessity for physical evacuations. By leveraging telehealth technologies, ships can connect with healthcare professionals onshore for real-time guidance and assistance. Partnerships with medical institutions can further enhance this support network, ensuring that specialized medical advice is always accessible, even in the middle of the ocean. This remote support can be crucial in stabilizing patients until they can be safely transferred to a shore-based medical facility.

Improved Communication and Coordination

Effective communication and coordination between ships, port authorities, and healthcare facilities are vital in managing health emergencies. Establishing clear communication channels can facilitate timely information exchange and coordinated responses to medical crises. A centralized database tracking the health status and medical needs of individuals on board can improve situational awareness and decision-making, enabling a more efficient and effective response.

International Collaboration

International collaboration is essential for standardizing health protocols and ensuring mutual aid during maritime health emergencies. Developing international agreements can help harmonize health measures across different jurisdictions, making it easier to manage health crises collectively. Cross-border collaboration can also enable resource sharing, such as medical supplies and personnel, thereby enhancing the overall response capacity. This collective approach ensures that no single entity bears the full burden of a health crisis, promoting a more resilient and adaptive maritime industry.

Research and Development

Investing in research to understand the transmission dynamics of infectious diseases in maritime settings is crucial. Such research can inform the development of new technologies and practices for better disease control and prevention at sea. Innovations in medical technologies and hygiene practices can significantly enhance the health security of maritime operations. Continuous

research and development can lead to more effective containment strategies and treatments, reducing the impact of future pandemics.

Policy and Regulatory Framework

Updating maritime health regulations to address the challenges posed by pandemics is necessary. Governments and international bodies must enforce compliance with health regulations and guidelines to ensure a standardized approach to health crises in the maritime industry. Strengthening these frameworks can provide a clear roadmap for managing health emergencies, ensuring that all stakeholders understand their roles and responsibilities.

Emergency Response Plans

Comprehensive emergency response plans tailored to maritime settings are vital. These plans should include detailed evacuation protocols, contingency planning, and resource mobilization strategies. Regular drills and simulations can test and refine these plans, ensuring that all stakeholders are prepared for real-life scenarios. By having robust response plans in place, the maritime industry can mitigate the impact of health emergencies and protect the well-being of individuals on board.

Infrastructure and Resource Allocation

Investing in port health infrastructure is crucial for effectively handling medical emergencies. Ports must be equipped with facilities to manage and treat infectious diseases, ensuring a safe and controlled environment for affected individuals. Additionally, ensuring a steady supply of essential medical equipment and PPE for maritime use is vital. Such investments can enhance the readiness of ports to deal with health crises, reducing the strain on maritime operations.

Public Health Education

Educating crew members and passengers on preventive measures, such as hygiene practices and vaccination, is essential. Awareness campaigns can promote adherence to health guidelines and protocols, reducing the risk of disease transmission. Public health education initiatives can empower individuals to take proactive steps in safeguarding their health and the health of others on

board. This proactive approach can prevent the spread of infectious diseases and maintain a healthy environment on maritime vessels.

Implementation Steps

Stakeholder Engagement: Involving all relevant stakeholders, including shipping companies, health authorities, and international organizations, in the planning and implementation process ensures a comprehensive approach. Stakeholder engagement fosters collaboration and commitment to health measures, enhancing their effectiveness.

Monitoring and Evaluation: Establishing mechanisms for continuous monitoring and evaluation of health measures on maritime vessels can provide data and feedback for making informed adjustments and improvements. Regular assessments ensure that health protocols remain effective and up to date, adapting to new challenges as they arise.

Funding and Resource Mobilization: Securing funding from governments, international organizations, and private sectors can support health measures and infrastructure improvements, ensuring the sustainability of health initiatives. Adequate funding is essential for implementing and maintaining comprehensive health strategies, ensuring long-term resilience in the maritime industry.

By adopting these strategies and solutions, the maritime industry can better prepare for and respond to health emergencies, reducing the need for medical evacuations and ensuring the safety and well-being of individuals at sea. These comprehensive measures not only address the immediate challenges posed by pandemics but also build a more resilient and adaptive maritime industry capable of handling future health crises.

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