Università di Genova
Advanced Medical Simulation and Training Centre (SIMAV)

ISMMPH
Italian Society Maritime Medicine and Public Health

# Training and Competencies of Ship Doctors and Nurses

## Position Paper – Policy and Training Framework

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## 1. Preface – General Context

The commercial and passenger shipping sector is now a highly complex technological, healthcare and organisational system. Modern cruise ships host populations equivalent to those of small urban centres, with thousands of passengers and hundreds of crew members from different cultural and healthcare backgrounds. There is also a considerable upward trend in maritime passenger traffic, both for ferries and cruises, which in 2025 reached more than 33 million passengers transported, with an average annual growth rate of 6.3% since 1990 [1]. At the same time, cruise itineraries increasingly include remote areas (polar regions and ocean routes) that cannot be readily reached by aircraft for the medical evacuation of urgent cases and lack health care facilities capable of providing advanced care [2]. In this context, the role of the ship doctor is crucial in ensuring the health and safety of passengers and crew, continuity of care, and the ability to respond to critical events under conditions of substantial operational isolation.

The 2006 ILO Maritime Labour Convention (MLC 2006, Regulation 4.1) [3] establishes that people on board must have access to adequate and prompt medical care, comparable, as far as possible, with that available ashore.

In many cases , the regulatory framework remains anchored to very outdated regulations and to a model of ships and onboard health care that is no longer current ( not covering key aspects such as the skills required by international guidelines, telemedicine, modern maritime public health, management of large-scale infectious disease outbreaks, occupational health of crew members according to (MLC 2006), medicolegal responsibilities, and the complexity of international regulations applicable when shipping operators work across different national jurisdictions).

Another important limitation of the current legislation is the lack of a defined role for the shipboard nurse. In view of the professional empowerment achieved by nursing, this health professional plays a fundamental role in ensuring adequate healthcare on board. In the future, on specific coastal or short-duration routes, also considering the development of Telemedical Maritime Assistance Service (TMAS) systems, the nurse could, as already provided for in some flag-state legislation, be the only healthcare professional on board.

Adequate training of health care personnel working on board is essential to ensure the safety and quality of care provided in the maritime setting.

Within the University of Genoa, which has long been active in research and training in the maritime sector owing to its history, its geographical location on one of the major ports of the Mediterranean, and its network of relationships with stakeholders (Health Port Authority, shipowners, shipbuilding companies, RINA), the joint working group of the University of Genoa Advanced Simulation Centre (SIMAV) and Italian Society Of Maritime Medicine and Public Health (ISMMPH) has developed this policy document to identify an appropriate model for training and continuing education of onboard health care professionals.


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This policy document, developed on the basis of a review of the literature, international best practices and contributions from sector experts, takes into account specific academic clinical competencies and expertise acquired by Genoa University Hospital through health care provision to seafarers, including during the COVID-19 pandemic, when Genoa served as a quarantine port for numerous cruise ships.

## 2. Context and Rationale

### 2.1. Limitations of the Current Regulatory Framework

The role of the ship doctor often continues to be regulated by European countries legislation that no longer reflects either the evolution of medicine or the transformation of maritime transport. The current national licence does not ensure mastery of the skills and competencies required of ship doctors by validated international guidelines and US legislation. The current legislation often does not provide for assessment of competencies relating to emergency/trauma management certifications, telemedicine in the maritime environment including the Telemedical Maritime Assistance Service (TMAS), hygiene requirements and guidelines for preventing infectious outbreaks in accordance with international maritime public health guidance such as SHIPSAN and the Vessel Sanitation Program, the role and competencies of the shipboard nurse, medicolegal competencies arising from regulatory developments, or clinical risk management and auditing systems on board. In addition, there are no clear provisions for continuing education and mandatory updating in relation to rapidly evolving international standards.

This document therefore proposes a modular, flexible and interdisciplinary training and continuing education model for ship doctors and shipboard nurses, aligned with the American College of Emergency Physicians (ACEP) guidelines, adopted by the Cruise Lines International Association (CLIA), on ship-doctor competencies and healthcare-facility requirements; the CDC Vessel Sanitation Program (VSP) hygiene and sanitation standards; the European SHIPSAN Manual; and the MLC 2006. The proposal integrates maritime telemedicine through TMAS and the International Radio Medical Centre (CIRM) to support timely clinical decision-making, improve the quality of care delivered on board, and reduce urgent medical evacuations and ship diversions for medical emergencies.

The proposed training model is based on modularity and is flexible in recognising competencies/skills already held by health care professionals currently working on board, while allowing continuing education pathways for maritime health care professionals. A specific training pathway is also outlined for health care professionals seeking coordination roles (Chief Doctor – Director of the Medical Service – and Chief Nurse).

### 2.2. Operational and Strategic Consequences

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# 3. International Comparison and Reference Standards

## 3.1. International Regulatory Framework

The WHO International Medical Guide for Ships defines onboard health care as ensuring the prompt treatment of illness and injury during a voyage [4]. The 2006 ILO Maritime Labour Convention (MLC 2006, Regulation 4.1) establishes that people on board must have access to adequate and prompt medical care comparable, as far as possible, with that available ashore [3]. The Convention also requires a 24-hour radio/satellite medical-assistance system to be available on board.

Directive 92/29/EEC of 31 March 1992, updated by EU Directive 2019/1834 of 24 October 2019, concerning minimum safety and health requirements, promotes (Article 2) improved medical care on board ships and provides guidance on onboard medical care and medical consultations by radio [5].

## 3.2. ACEP Guidelines and US Standards

In the United States, the reference document for health care facilities on cruise ships is the American College of Emergency Physicians (ACEP) Health Care Guidelines for Cruise Ship Medical Facilities. Its requirements, in accordance with 46 US Code (§3509 medical standards), have binding legal effect for passenger ships authorised to carry more than 250 people that embark and disembark passengers at US ports [6]. The document establishes that the role of the onboard medical department is to provide passengers and crew with high-quality healthcare, including prompt initial stabilisation, diagnosis and treatment of critical or clinically unstable conditions, as well as support, management and care of patients on board and assistance during medical evacuations when indicated. The guidelines also define requirements for medical equipment, minimum clinical competencies for ship doctors, emergency-management procedures and telemedicine criteria. CLIA and many international cruise companies currently use these standards as a basis for selecting and assessing their doctors.

The main limitation of this document is that it does not include competencies in international public health, prevention of infectious outbreaks, and occupational medicine, which are integral to the training of a ship doctor acting as a government health officer [7]. The triad of competency areas required of an onboard health care professional (emergency/clinical care, occupational medicine and public health) has recently been adopted by the International Maritime Health Association as the “three pillars” model [8]. Another limitation of the current ACEP guidelines is the absence of provisions concerning the training/competencies required for shipboard nurses and access to healthcare coordination roles.


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### 3.3. WHO, International Prophylaxis and Maritime Public Health

The International Health Regulations (IHR 2005), which establish States' obligations for the detection, notification and management of public health events of international concern, provide a series of measures and actions concerning maritime conveyances aimed at preventing the spread of infectious diseases, pathogens and vectors. Onboard health care professionals must have appropriate competencies to implement these measures (including quarantine measures), ensure the required flow of information to port health authorities, and manage infectious outbreaks on board [9].

The World Health Organization has published the Guide to Ship Sanitation [10], the main global reference for preventing and controlling hygiene and sanitation risks on board, as well as the Handbook for Management of Public Health Events on Board Ships [11], which addresses actions to be taken in the maritime setting during biological, chemical and radiological public health emergencies.

Onboard health care personnel are also required to have extensive knowledge and appropriate competencies in implementing internationally recognised maritime public health guidelines. In the European Union, this includes the SHIPSAN consortium [12], which provides for periodic inspections of passenger ships operating on international routes to verify the hygiene requirements set out in the European Manual for Hygiene Standards and Communicable Disease Surveillance on Passenger Ships [13], covering medical facilities, prevention of infectious diseases, water supplies (both potable and recreational, including pools and spas), cabins, food preparation and service areas, onboard waste, sewage and ballast-water management. The SHIPSAN Manual also contains guidelines for prevention, monitoring, information flows to port health authorities, and management of onboard outbreaks involving Legionella, airborne pathogens (ILI – influenza-like illness) and gastrointestinal illness (AGI – acute gastrointestinal illness). A similar onboard hygiene auditing system is used in the United States through the Vessel Sanitation Program [14], which applies to ships carrying US passengers.

Based on the experience acquired in the maritime sector during the COVID-19 pandemic, and in an increasingly globalised world characterised by the emergence and re-emergence of infectious diseases, it is essential that onboard health care professionals possess the epidemiological and public health competencies needed to act promptly, according to a One Health approach, in collaboration with national health authorities to prevent the spread of pathogens and their vectors.

### 3.4. CLIA, MLC 2006 and Other Frameworks

The Cruise Lines International Association (CLIA) guidelines and the Maritime Labour Convention (MLC 2006) provide further essential elements, from protection of crew health to working conditions. An effective and forward-looking national decree must necessarily interface with these frameworks rather than merely revising historical domestic legislation.


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### 3.5. Overview of the International Scientific Literature

The results of searches conducted in SCOPUS in February 2026 using the keywords “Ship doctor and training” were used to identify the reference papers cited in the bibliography as [15]–[24]. Reference was also made to the standards and organisations listed in [40]–[51], which were subsequently used in drafting this document.

Among the publications of particular relevance to the development of this document are, at European level, those of the German Society of Maritime Medicine and the Norwegian Centre for Maritime Medicine at the University of Bergen.

## 4. Professional Profile of the Modern Ship Doctor

The modern ship doctor must possess multiple competencies because the role requires integration of advanced clinical skills with responsibilities in public health, occupational medicine, health care risk management, telemedicine and medicolegal matters. The doctor also works in a context of relative healthcare self-sufficiency, often far from hospital facilities, with limited resources and extensive responsibilities towards passengers, crew and shipowners.

### 4.1. Advanced Clinical Competencies

Required clinical competencies include management of medical and trauma emergencies, including advanced life support (ALS), major trauma management (ATLS) and paediatric emergencies (PALS); the ability to perform minor surgical and orthopaedic procedures; proficiency in basic obstetric techniques for childbirth and management of related complications; pharmacological management of major time-critical syndromes; and use of point-of-care ultrasound (POCUS) for rapid assessment of critical conditions.

### 4.2. Hygiene, Public Health and Outbreak Management

The ship doctor is also responsible for health and hygiene surveillance, prevention and management of infectious outbreaks (e.g. norovirus gastroenteritis, legionellosis, influenza, COVID-19) and works with other company personnel to control and implement hygiene requirements, including those concerning water and food, established by WHO, EU SHIPSAN and the CDC Vessel Sanitation Program. This requires competencies in applied epidemiology, onboard quarantine management, communication flows with port health authorities, and reporting in accordance with IHR 2005.


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### 4.3. Telemedicine and Linkage with Shore-based Services

Telemedicine has become a structural component of modern maritime healthcare. The ship doctor/nurse must be able to use teleconsultation systems with shore-based specialists, share diagnostic images, and track and document clinical decisions made in cooperation with reference centres. Training must therefore cover both technical aspects (platform use and data security) and ethical/legal aspects related to shared responsibility.

Modern advanced TMAS services for ships include: (a) second medical advice and support for diagnostic decisions; (b) decision support from intensive-care services; (c) remote reporting of diagnostic imaging (X-rays and ultrasound); (d) specialist cardiology consultations (including ECG reporting), dermatology and ophthalmology; and (e) psychiatric consultations and psychological support. Availability of advanced TMAS services for onboard health care personnel should be ensured especially on routes in areas that are not readily accessible for air medical evacuation or where adequate health care facilities are unavailable ashore, and where regulations may, in selected cases, provide for only a nurse to be present on board.

### 4.4. Maritime Occupational Medicine

Onboard health care professionals also play an essential role in protecting crew health: general medical care; follow-up of chronic diseases (diabetes, asthma, hypertension, previous cardiovascular events, chronic low back pain, HIV infection); management of chronic therapies (e.g. anticoagulants); medical disembarkation; prevention and prophylaxis of infectious diseases, including vaccination; management of occupational injuries and diseases; health promotion; and health education and prevention activities under particularly demanding working conditions (reduction of cardiovascular risk, obesity, smoking, sexually transmitted infections, alcohol misuse, substance use, gambling disorders, and mental health conditions such as anxiety, stress and depressive syndromes) [25]. Training should therefore include elements of occupational medicine specific to the maritime environment, in line with the Maritime Labour Convention and international maritime labour regulations.

### 4.5. Medico-Legal Aspects and Responsibilities

The ship doctor is exposed to complex medicolegal responsibilities involving not only clinical practice but also management of sensitive events such as suspected sexual assault, deaths including suicides on board, offences against personal integrity, occupational injuries, medical disembarkation decisions and management of documentary evidence. Training must include a foundation in international forensic medicine, knowledge of the laws of the main jurisdictions involved, and the ability to document and preserve evidence. In particular,


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in cases of suspected sexual assault, proficiency in diagnosis, treatment, post-exposure prophylaxis, emergency contraception and collection of biological samples for evidentiary purposes using appropriate kits is essential (a mandatory requirement on passenger ships embarking passengers in the USA) [26,27].

## 4.6. Healthcare Risk Management in the Maritime Setting

Onboard health care professionals must possess the competencies needed to make the health care risk management system effective (Law 24/2017), proactively identifying and reducing adverse events and safety risks for patients and healthcare workers [28] through a model that takes into account the specific characteristics of the maritime sector.

The onboard health care staff implements procedures to identify and manage sentinel events, adverse events and near misses, and there must be evidence of the presence and use of the relevant reporting forms together with corrective actions taken. Data must always be analysed when negative trends or adverse changes are identified. Event analysis, including with the support of root-cause analysis, may be conducted at the level of an individual ship or the company. The onboard medical department must have and implement procedures for patient safety and prevention of medical error [29]. Onboard health care professionals must also be trained in procedures for appropriate antibiotic use and related programmes to prevent antimicrobial resistance [30].

## 4.7. Quality System for Onboard Healthcare

Onboard health care professionals must possess the competencies needed to effectively implement the quality system for health care delivery. In particular, they must demonstrate the ability to manage procedures; collect, validate and analyse data; participate in audits and peer review, including at company level; operate systems for measuring and analysing customer satisfaction; implement continuous-improvement actions; and measure and interpret process, outcome and result indicators. They must also be able to process patients' sensitive data in accordance with applicable legislation and protect confidentiality [31].

Particular importance should be given to knowledge, practical ability and periodic training in the procedure that ensures prompt intervention by the medical response team in health emergencies occurring on board, including in the most remote areas of the ship.

## 4.8. Occupational Health and Safety in the Medical Department

Onboard health care professionals must have appropriate competencies to implement the occupational health and safety prevention system applicable to health care staff activities [32]. Of particular relevance are


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procedures concerning chemical hazards, radiation risks associated with portable X-ray equipment, and prevention of biological hazards including sharps injuries (training, preventive measures and procedures to be implemented in case of contamination, including testing and post-exposure prophylaxis) [33–35].

All onboard health care personnel must receive specific training in donning and doffing Category III personal protective equipment (PPE) [36]. Procedures, training and competencies aimed at preventing assaults or acts of violence against onboard health care personnel [37], as well as activities related to monitoring and administering vaccinations required for medical/nursing staff, are also particularly important.

## 5. Professional Profile of the Shipboard Nurse

The role of the shipboard nurse, which is not yet fully defined, is central to the daily practice of many international cruise companies. The shipboard nurse performs essential functions including triage, procedural assistance, medication management, infection control, basic health education for crew members, telemedicine support and initial emergency response.

In some flag-state legislations (e.g. Norway), the nurse is the only healthcare professional required on board ships operating on certain short-duration routes and in areas reachable by air for urgent medical evacuation.

Two main profiles should be defined: the Basic Shipboard Nurse, with operational competencies in emergency care and standard nursing management; and the Nurse Officer (Chief Nurse), with additional responsibilities for coordinating the nursing team, managing pharmaceutical stores, supervising hygiene protocols and structured collaboration with the Chief Doctor. The Nurse Officer also has more advanced competencies in emergency management and in managing interventions supported by TMAS, making the role suitable for potential deployment if Italian legislation were to provide, in specific circumstances, for a single non-medical healthcare professional on board.

## 6. Professional Competency Matrix

To provide a concise yet operational representation of the required competencies, a matrix is proposed covering five profiles: 1) third, second and first assistant ship doctor (MA); 2) ferry ship doctor (MS); 3) Chief Doctor – Director of the Medical Service (CD); 4) Basic Nurse (IB); and 5) Nurse Officer (Chief Nurse on cruise ships or sole healthcare professional on board) (NS). Competency levels are indicated as: C (basic knowledge), B (basic autonomous practice), A (full competence), A+ (advanced/expert competence). The following figure shows a competency heatmap for the different profiles:


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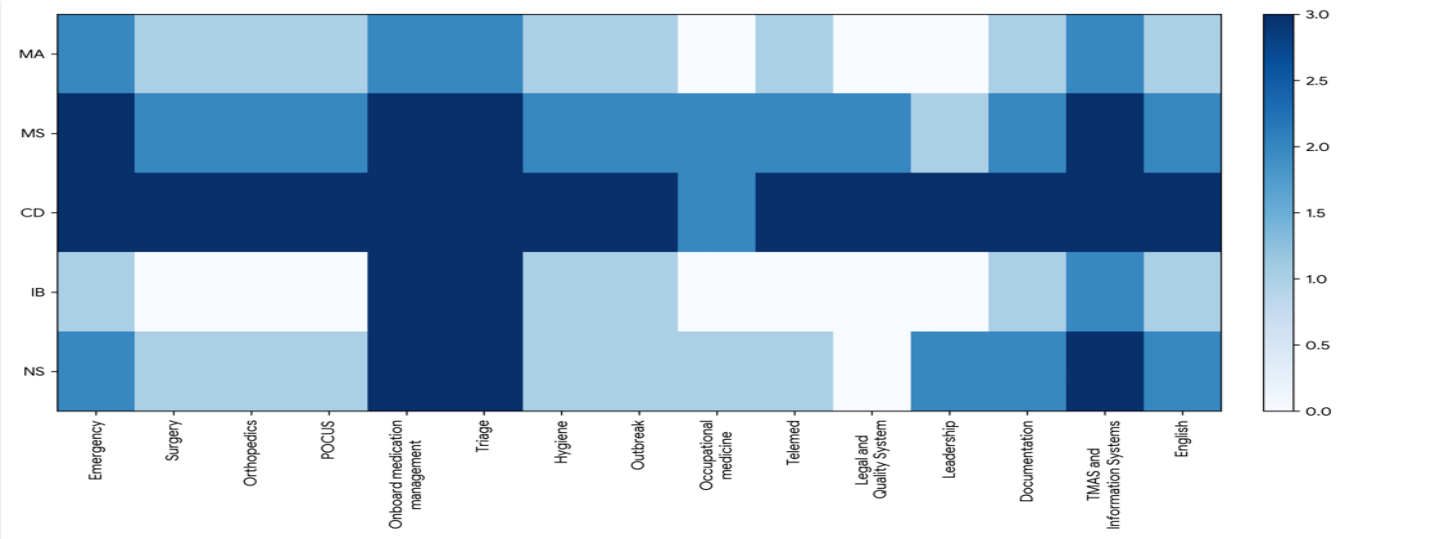



Figure A1 – Competency heatmap for Ship Doctors and Shipboard Nurses.

## 6.1. Medical Profiles – Summary Representation

Radar charts provide an intuitive way of visualising profile differences among: (a) third/second/first assistant doctors on cruise ships (MA); (b) ferry ship doctor – first officer (MS); and (c) Medical Director of the Health Service on cruise ships – Chief Doctor (Medical Director) (CD).

The following ship-doctor profiles are identified:

a) CD. Director of the Onboard Medical Service (Chief Doctor) on cruise ships: responsible for the medical department of a cruise ship and coordinator of the onboard health care team.
b) MS. Senior ferry ship doctor (first officer): the sole doctor on a ferry (where there are two doctors, one assumes the role of Director of the Onboard Medical Service).
c) MA. First/second/third assistant doctor (first, second and third officer): works in the medical department under the coordination of the Director of the Medical Service.

The Chief Doctor working on cruise ships, characterised by a large number of persons on board and often operating on ocean itineraries or in remote areas, requires not only field experience but also advanced theoretical and practical training in emergency and urgent care. As head of the medical service and team coordinator, the Chief Doctor must also possess competencies in public health, shipboard hygiene, outbreak management, forensic medicine, clinical risk management and leadership.


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The ferry doctor usually operates on routes in areas accessible for medical evacuation and is normally the only doctor on board. The competency level is intermediate.

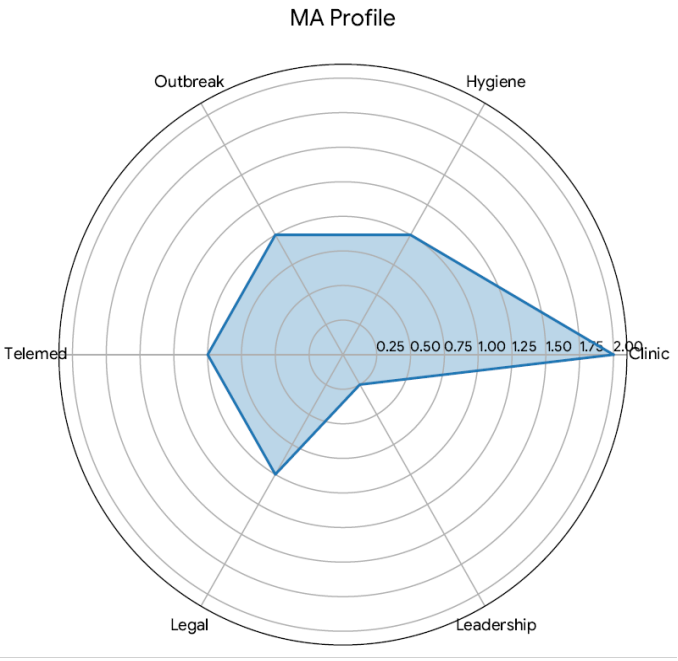



Figure B1 – Radar Chart. Profiles of Doctors on Cruise Ships (MA)


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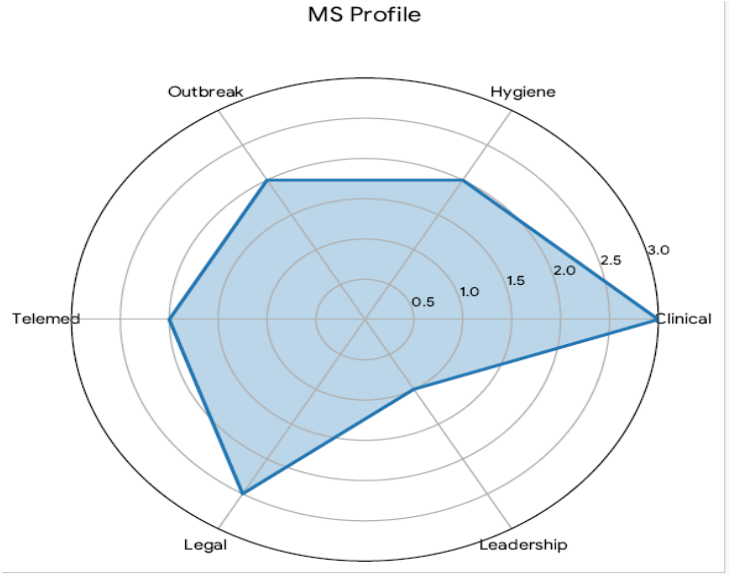



Figure B2 – Radar Chart. Ferry Ship Doctor (MS)

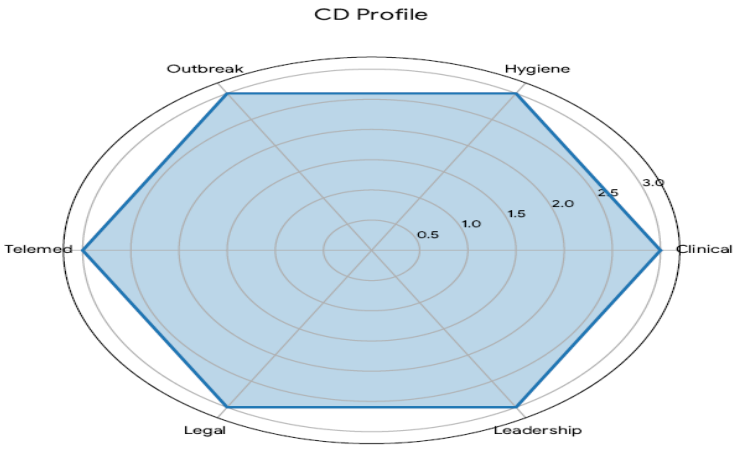



Figure B3 – Radar Chart – Chief Doctor. Director of the Medical Service (CD)


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## 6.2. Overall Comparison of Medical Competencies

The following chart summarises the overall competency score for the three medical profiles, highlighting the expected progression in terms of responsibility and decision-making autonomy.

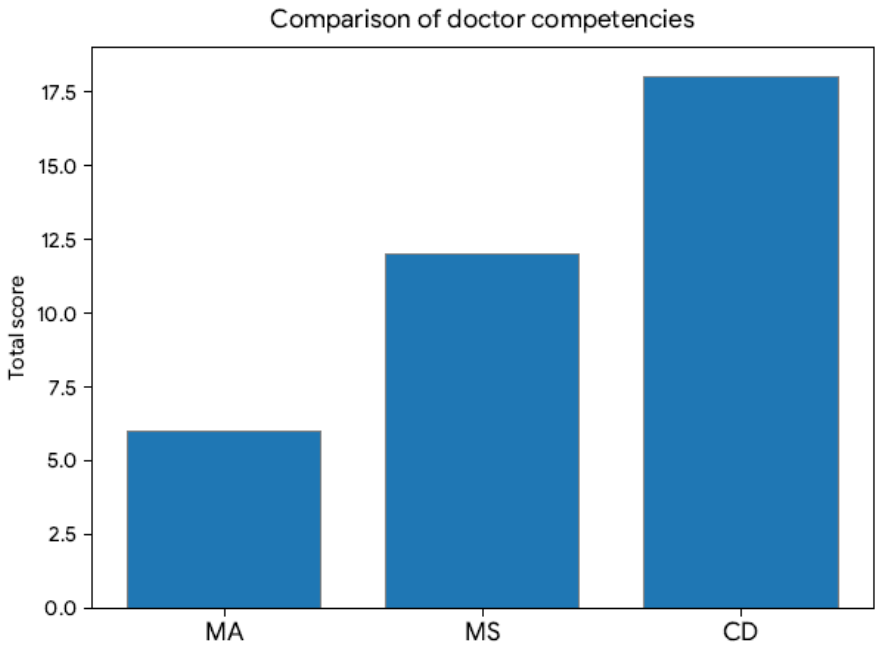



Figure C1 – Overall Comparison of Medical Competencies.

## 7. Proposed Modular Training Model

A modular, flexible but rigorous training model is proposed, based on competency areas and on modules that can be accumulated through different pathways for doctors and nurses. The modules should be delivered by universities or academic consortia, with the involvement of healthcare organisations, Port Heatlh Authorities, and technical partners such as RINA, Harbour Master Offices and the main shipping companies. The dedicated modules are described in Technical Annex Part I and organised into sections:

For ship doctors, modules M1–M6 provide the specific training arising from the needs and regulations described above in this document.


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For nurses, in addition to parts of M1 focused on nursing competencies, a specific module (M10) provides teaching on advanced triage, medication and medical-store management, infection control, nursing emergencies, telemedicine support, basic crew health education and high-fidelity simulation.

For all healthcare profiles, common training modules (M7, M8 and M9) cover acquisition/improvement of language skills, knowledge of the specific characteristics of ships and the maritime environment, and prevention of specific occupational risks.

The overall training pathway should include different delivery methods: classroom teaching/distance learning, practical exercises through advanced simulation, and clinical placement in a real onboard environment. The modular model provides the necessary training flexibility, with the advantage of:

a) Avoiding unnecessary duplication of recognised certifications for skills/competencies already acquired by the learner, either through training provided by authorised bodies or during specialist training or previous clinical practice.
b) Allowing a distinction between new entrants (requiring a complete training pathway) and professionals already working in the sector.
c) Allowing learners to follow the training pathway part-time to acquire/integrate the competencies required for their profile while continuing their professional activity.
d) Providing a training offer that also ensures continuing education in the field of maritime medicine.

## 8. Regulatory Proposal for Flag state legislations

In light of the considerations above, the flag regulation decree should contain at least the following key elements:

- Definition of a competency matrix for ship doctors and shipboard nurses aligned with ACEP guidelines, WHO, EU SHIPSAN, CLIA and MLC 2006 standards.
- Formal introduction of the ship-nurse role, with differentiated profiles (Nurse and Chief Nurse Officer) and specific training requirements.
- Mandatory continuous professional development (maritime CME) for ship doctors and shipboard nurses, with dedicated content.
- Primary responsibility for training assigned to universities and academic consortia, with structured collaboration with Health Port Authorities, Harbour Master Offices, Maritime scientific associations, technical bodies, sector experts and private operators.
- Establishment of an accreditation system for training centres guaranteeing minimum standards for teaching staff, facilities, simulation and access to onboard placements, with audits and outcome indicators.


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- Explicit recognition of telemedicine as an essential component of clinical practice in the maritime environment, with specific technical and training requirements.
- Introduction of national guidelines for health care risk management in the maritime setting and for auditing onboard health care facilities, in line with WHO, EU, SHIPSAN and ACEP.
- Promotion of public–private integration with shipowners, shipyards and classification societies for equipment, simulation and onboard risk management. In particular, establishment of a permanent technical working group on maritime medicine involving the Ministry of Health, universities, shipowners, port health authorities (USMAF), CIRM, RINA/certification bodies, maritime-medicine research groups and representatives of relevant European projects (SHIPSAN).
- Provision for a national register of trained health care professionals, differentiated by role (Assistant Doctor, Ferry Ship Doctor, Director of the Medical Service, Shipboard Nurse, Nurse Officer), maintained by the Ministry of Health, together with a register of their continuing education.
- Recognition of doctors already listed in national registers (authorised and licensed substitute doctors) and of doctors authorised under derogation who have completed at least two years of service at sea, with a transitional period to address any training gaps.
- To ensure the professional and ethical independence of onboard health care professionals and avoid conflicts of interest with shipowners, establishment of a central joint body to examine disciplinary matters concerning onboard professionals and reports/complaints raised by health care staff against the shipping company.

**ACCESS PATHWAY:**

**a)** Ship Doctor or Shipboard Nurse – New Entrant

a. Verification, before the start of training, of the following prerequisites:
   - Medical fitness examination
   - Pass an English-language test with content equivalent to B2 level for medical English.

For NEW-ENTRANT DOCTORS:

- Enrolment in a postgraduate specialty programme in emergency medicine or equivalent, internal medicine or equivalent, general surgery or equivalent, or in the three-year general-practice training programme.
- or at least 3 years of certified clinical experience in emergency medicine, internal medicine, general surgery or equivalent services.


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- or at least 3 years of experience in primary-care services (single primary-care role physician).

b. Creation of an individual electronic training portfolio, with preliminary recognition by the accredited training centre of competencies already acquired through certified courses, during specialist training or through clinical practice.
c. Registration in the electronic training portfolio of all completed training modules/placements in shore-based health care facilities and on board.
d. Final placement of at least one week at sea under the supervision of a tutor ship doctor.
e. Final certification issued at the end of the training pathway for (a) assistant doctor on cruise ships (MA) and/or ferry ship doctor (MS), with enrolment in a national registry

For NEW-ENTRANT NURSES:

- Registration in a nursing professional order for at least 1 year.
- Creation of an individual electronic training portfolio, with preliminary recognition by the accredited training centre of competencies already acquired through certified courses or clinical practice.
- Registration in the electronic training portfolio of all completed training modules/placements in shore-based health care facilities and on board.
- Placement of at least 1 month on board under the supervision of a tutor shipboard nurse.

b) Doctor / Nurse already working on board (with a certified period of service at sea of at least 2 years, including non-continuous service) or already listed in the Ministry of Health registers of authorised and licensed doctors:

A transitional period should be provided during which the following steps will be undertaken:

a. Creation of an individual electronic training portfolio, with preliminary recognition by the accredited training centre of competencies already acquired through certified courses, during specialist training or clinical practice.
b. Delivery of missing training modules (with exemption from onboard placements) and registration in the training portfolio.
c. Final certification relating to the function already held, which will confirm and enter the professionals in the national registers (Authorised Ship Doctors and doctors authorised under


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derogation with at least two years of service at sea will be entered in the Ferry Ship Doctors (MS) and Assistant Doctors (MA) registers. Licensed Doctors will be entered in the register of Ship Doctors who are Directors of the Medical Service (CD). Nurses with at least two years of service at sea will be entered in the Shipboard Nurses register).

**c)** Access to the Chief Doctor and Chief Nurse Officer roles (new entrant to the role)

a. Verification of at least 4 years of actual service at sea as a healthcare professional.
b. Verification of fulfilment of the continuing education requirement in maritime medicine.
c. Delivery of the dedicated training pathway for acquisition of coordination competencies, with registration in the individual electronic training portfolio.
d. Final certification issued
e.

d) Chief Nurse and Chief Doctor (already in service)

A transitional period should be provided during which the following steps will be undertaken:

a. Creation of an individual electronic training portfolio, with preliminary recognition by the accredited training centre of competencies already acquired through certified courses, during specialist training or clinical practice.
b. Delivery of missing coordination-training modules (with exemption from onboard placements) and registration in the training portfolio.
c. Final certification issued to confirm inclusion in the relevant national Chief Doctor or Chief Nurse registers.

## 8.1. Expected Benefits

- Improved onboard health safety: prevention/response to outbreaks and management of time-critical emergencies (reduction in malpractice litigation).
- Alignment with international standards: consistency with ACEP/CLIA and VSP/SHIPSAN manuals; interoperability on US/EU itineraries.
- Operational efficiency: more timely tele-assistance, reduced ship diversions and MEDEVAC evacuations, and enhanced value of the port and university system.
- Resolution of the current issue relating to the undefined role of the shipboard nurse, including the possibility, on certain short-duration ferry routes close to the coast, of having only a trained nursing professional on board.


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## 9. Strategic Assessment

OMITTED

## 10. Technical Annexes and Regulatory References

It is suggested that the following be included as annexes to the Decree:

- a competency-mapping table;
- the main international reference guidelines;
- a model telemedicine protocol;
- onboard health care service hygiene and sanitation audit templates based on the WHO Guidelines for Ship Sanitation Inspection and EU SHIPSAN.

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# Technical Annex – Part I1. Role Profiles and Competency Matrix

## 1.1. Ship Doctor (Cruise/Passenger Ferries)

Minimum requirements: degree in Medicine and Surgery; specialist/board qualification in emergency medicine, internal medicine, general surgery (or equivalent) or general-practice training; ≥3 years of postgraduate experience, or a certified period of service at sea of at least 2 years; ACLS/PALS/ATLS certifications; competencies in procedural sedation, minor surgery, orthopaedics and focused ultrasound (PoCUS); technical English equivalent to B2. Physical fitness according to STCW/MLC.

Competencies: advanced stabilisation (shock/ACS/trauma/respiratory emergencies), onboard diagnostics (ECG, X-ray where available, PoCUS), TMAS/CIRM telemedicine with integration of tele-specialty services, hygiene and disease control (VSP/SHIPSAN), legal/forensic management and risk management.

## 1.2. Shipboard Nurse

Minimum requirements: degree in Nursing; registration with the Nursing Professional Order for at least one year; emergency/urgent-care experience; BLS/ACLS/PALS where applicable; technical English equivalent to B2.

Competencies: triage, medication and healthcare-waste management, use of TMAS devices and platforms, infection control and surveillance of infectious outbreaks; hygiene audits and VSP/SHIPSAN compliance; triage and support for stabilisation; management of telemedicine devices and data capture for TMAS; reporting and communication with authorities/ports.

## 1.3. Individual Certification

Ship Doctor: Objective Structured Clinical Examination (OSCE) and portfolio; maintenance through maritime CME/ECM and STCW/MLC re-assessment.

Shipboard Nurse: OSCE and portfolio; maintenance through maritime CME/ECM and annual hygiene audit (simulated).


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# 2. Training Model and Accreditation

## 2.1. Teaching Modules (Modules – M) and Learning Objectives (LO)

List of planned teaching modules:

| Module | Title |
|---|---|
| M1 | Maritime Medical Emergencies and maritime mass casualty incidents |
| M2 | Technical Competencies and Skills |
| M3 | Diagnostic Techniques – Use of Onboard Equipment |
| M4 | Public Health and Outbreak Management |
| M5 | Telemedical assistance and Remote Diagnostics |
| M6 | Professional Role, Maritime Forensic Medicine, Quality System and Healthcare Risk Management in the maritime setting |
| M7 | Maritime Occupational Medicine |
| M8 | Technical English and Onboard Communication |
| M9 | Prevention of Specific Occupational Risks in Onboard Medical Facilities |
| M10 | Specific Characteristics of Ships and Maritime Navigation |
| M11 | Shipboard Nurse – Nursing in the Maritime Setting |
| M12 | Practical On-board training for New Entrants |
| M13 | Coordinator Course for Access to Chief Ship Doctor or Chief Shipboard Nurse positions. |

TABLE 1 – Teaching Modules

# Table 2 - Teaching Modules, Learning Objectives and Duration.

| Module | Title | Key Competencies | Learning Objectives (LO) | Duration [h] |
|---|---|---|---|---|
| **M1** | Maritime Medical Emergencies and maritime mass casualty incidents | A) ALS<br>B) PALS<br>C) Shipboard medical emergency structure (emergency number, communication systems, dedicated routes, emergency bags, onboard defibrillator plan<br>D) Mass casualty (secondary medical facilities, triage, large passenger in response times, periodic simulations and training)<br>E) Abandon ship, fire, flooding, large passenger incidents medical operations<br>F) MEDEVAC, SAAR-maritime rescue systems interactions (with practical simulation)<br>G) Medical assistance to other ships<br>H Recovery of migrants at sea. | Ability to manage medical time-critical scenarios; ability to plan evacuation. | 60 |
| **M2** | Technical Competencies and Skills | A) Basic surgical and orthopaedic techniques including suturing, treatment of burn eschars, management of fractures and dislocations<br>B) Basic obstetric techniques for childbirth and related complications<br>C) Urinary catheterisation<br>D) Peripheral and intraosseous vascular access<br>E) Main sedation techniques<br>F) Nasogastric tube insertion<br>G) Dental procedures | Ability to perform the fundamental operational skills required for healthcare practice on board. | 20 |

| | | | | |
|---|---|---|---|---|
| **M3** | Diagnostic Techniques – Use of Equipment | A) Basic diagnostic and emergency POCUS (Point-of-Care Ultrasound)<br>B) Point-of-care testing devices including PCR equipment<br>C) Rapid diagnostic tests | Ability to perform basic diagnostic tests on board, including tests for the most common infectious diseases. | 15 |
| **M4** | Public Health and Outbreak Management | A) International Health Regulations<br>B) WHO SSEC inspections<br>C) Free pratique and Maritime Health Declaration<br>D) Collaboration within the SHIPSAN and VESSEL SANITATION Audit Program framework; onboard public health requirements (medical facilities, potable and recreational water, cabins, food, HACCP, vector control, waste management)<br>E) Prevention protocols and information flows for onboard infectious outbreaks (ILI, AGI)<br>F) Isolation and quarantine measures; contact tracing<br>G) Collaboration with onboard public health officers and port health authorities<br>H) Legionella prevention in onboard water and HVAC systems<br>I) Travel medicine, emerging diseases, pathogen vectors<br>L) Prophylactic and vaccination measures | Ability to conduct internal public health audits; contribute to maintaining onboard public health requirements; manage infectious outbreaks and ensure required information flows (onboard isolation of infectious cases , contact tracing); understand health risks associated with emerging diseases, pathogen vectors and geographical areas visited by the ship, competency to recommend/prescribe prophylactic measures including on-board vaccination. | 25 |
| **M5** | Telemedical assistance (TMAS) and Onboard Information Systems) | A) Maritime TMAS services (CIRM and other European providers)<br>B) Onboard medical-center information systems<br>C) advanced second-level telemedicine services (including diagnostic and specialist support, psychiatric and psychological tele-assistance) and remote triage | Perform effective teleconsultations; integrate devices and data; document decisions;<br>Understand telecommunications and commonly used platforms. | 30 |

| | | | | |
|---|---|---|---|---|
| **M6** | Professional Role, Maritime forensic medicine, Quality System and Healthcare Risk Management in the maritime setting | A) Historical overview of onboard health care<br>B) Role and position of the ship doctors and nurses<br>C) Procedures in case of death on board<br>D) Procedures in cases of onboard injury, offences against physical integrity, suicides<br>E) Management and collection of evidence in cases of sexual assaults<br>F) Privacy protection and processing of PHI (Protected Health Information)<br>G) Maritime health care risk management system<br>H) Quality system for onboard health care | Manage documentation/chain of custody; preserve evidence; coordinate information and operations with port authorities when medicolegal events occur on board.<br>Respect patient privacy and protect health information<br>Implement procedures and use tools for maritime health care risk management and quality system of shipboard medical service.<br>Prescribe and monitor antibiotic use in accordance with guidelines to prevent antimicrobial resistance. | 15 |
| **M7** | Maritime Occupational Medicine | A) Medical Fitness of seafarers according to STCW, MLC2006, ILO/IMO guidelines<br>B) Specific risk factors in maritime work<br>E) Preventive health actions for crew members (reduction of cardiovascular risk, obesity, smoking, alcohol misuse, drug use, depressive disorders and anxiety syndromes)<br>G) Management of sefarers with chronic pathologies<br>H) Collaboration with maritime doctors and PEME centers | Apply STCW/MLC fitness requirements and manage occupational health preventive actions for crew | 5 |
| **M8** | Technical English & Onboard Communication | A) Medical English<br>B) SBAR (Situation, Background, Assessment, Recommendation) handover<br>C) Crew briefings; intercultural communication<br>D)Maritime English | Prepare handovers, international medical forms, briefings and education; communicate with international health care facilities, including foreign TMAS centres. | 15 |

| | | | | |
|---|---|---|---|---|
| **M9** | Prevention of Specific Occupational Risks in Onboard Medical Facilities | A) Prevention of chemical and biological risks including sharps injuries<br>B) Correct use of PPE indicated for biological risk (practical donning/doffing exercise)<br>C) Radiation-protection rules and prevention of radiation risk | Know and prevent injuries in the medical department. Effectively manage protocols for contamination and injuries contaminated with biological material. | 5 |
| **M10** | Specific Characteristics of Ships and Maritime Navigation | A) Knowledge of ship structure<br>B) Onboard organization and hierarchy<br>C) Safety and security rules<br>D) Survival at sea | Knowledge of the maritime working environment by the healthcare professional. | 10 |
| | | | **TOTAL** | **200** |
| **M11** | NURSING IN THE MARITIME SETTING | A) TRIAGE<br>B) HEALTHCARE-WASTE MANAGEMENT<br>C) CLINICAL DOCUMENTATION<br>D) ORGANISATION OF MEDICAL FACILITIES<br>E) ONBOARD PHARMACY MANAGEMENT<br>F) MANAGEMENT OF HEALTHCARE AND USE OF TMAS DEVICES | | 40 |
| **M12** | Practical Onboard Training for New Entrants | Ship Doctor | Onboard placement | 1 week |
| | | Shipboard Nurse | Onboard placement | 1 week |

| | | | | |
|---|---|---|---|---|
| **M13** | Chief Coordinator Course | A) In-depth study of basic-course modules<br>B) Peer review and real-world clinical cases under the supervision of Chief Doctors and Chief Nurses<br>C) Team management<br>D) Management and organization of the onboard medical centre<br>E) Pharmacy and medical logistic<br>F) Leadership<br>G) NLP and effective communication<br>H) Legal and ethical aspects<br>I) Healthcare risk management<br>L) Quality system<br>M) Maritime public health system<br>N) Advenced trauma life support ATLS<br>O) Nerve blocks, including those used in dentistry<br>P) Advanced POCUS<br>O) Portable onboard X-ray equipment<br>P) In-depth study of the specific characteristics of ships and maritime navigation | Training of the competencies required for the Chief Ship Doctor or Chief Shipboard Nurse role (through classroom teaching/distance learning, individual study and a final paper). LO: ability to manage the human and technological resources of the onboard medical centre. | 154 |
| | | | | **154** |

## 2.2. Competency Assessment (OSCE and Practical Tests)

Format: 1) multi-station OSCE; 2) situational written test; 3) portfolio.

Doctor examples: ACLS (cardiac arrest on board), procedural sedation, PoCUS FAST, TMAS/CIRM teleconsultation, norovirus outbreak (VSP policy), Legionella event (SHIPSAN), legal/forensic scenario (STCW/MLC), handover in technical English.

Nurse examples: ACLS triage, VSP/SHIPSAN hygiene audit, management of TMAS devices. Cumulative OSCE with successful completion of key stations; written test on VSP/SHIPSAN protocols; portfolio with simulated cases. Tutor report on the onboard placement.

## 2.3. Individual Certification and Maintenance

Ship Doctor: competency certification for Modules M1–11 (and M12 for Chief Doctor), OSCE M1–M4–M5, portfolio of 5 cases and STCW/MLC fitness; maintenance through maritime CME/ECM (≥20 credits/2 years), outbreak refresher training and renewed STCW/MLC fitness.

Shipboard Nurse: competency certification for Modules M6–11 (and M12 for Chief Nurse), OSCE N1–N3, portfolio of 3 cases and STCW/MLC fitness; maintenance through maritime CME/ECM, annual hygiene audit (simulation) and 1 outbreak exercise/year.

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## 3.1. Performance Indicators (KPIs) on Board

The introduction of the following KPIs relating to the effectiveness of the training of health care professionals is also proposed.

| Indicator | Definition | Target | Source/Standard |
|---|---|---|---|
| Response time of the medical response team | Interval from the call to the onboard medical emergency number to arrival of responders at the patient | Within 6 minutes for suspected cardiac arrest; within 10 minutes for other cases | Tuscan intra-hospital emergency guidelines |
| Time to stabilisation | From first medical contact to stabilisation (shock/ACS/respiratory) | ≤60 min | ACEP/CLIA |
| VSP/SHIPSAN hygiene compliance | Public-health audit score; medical facilities and infectious-disease prevention | Grade A/B according to SHIPSAN; ≥85 VSP score | CDC VSP database; EU SHIPSAN; SSEC inspections. WHO SSEC hygiene inspections are performed every 6 months on all ships internationally (USMAF in Italy) |
| Outbreak management | AGE/Legionella outbreaks per 100 voyages | Grade A/B according to SHIPSAN; ≥85 VSP score | CDC VSP database; EU SHIPSAN; SSEC inspections. WHO SSEC hygiene inspections are performed every 6 months on all ships internationally (USMAF in Italy) |
| Handover quality (English) | SBAR/closed-loop assessment | ≥80% checklist | CLIA practice |
| Number of malpractice legal actions | Number of medical-malpractice cases in which the company is found liable | Same percentage as data for a land-based emergency department | Malpractice-action register |
| Customer-satisfaction data | Perceived quality level among passenger and crew users of the medical department (reported separately) | At least 60% of maximum score | Perceived-quality questionnaires/surveys |


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|---|---|---|---|
| Complaint analysis | User complaint register | Evidence that 100% of cases were analysed by the health care team and feedback was provided to the user | Medical-centre user complaints |
| Accessibility of the onboard medical centre | Opening hours of the outpatient clinic for passengers and crew | For cruise ships, open 7 days/week for at least 1 h per 1,000 persons on board | Service charter |
| Management of sexual-assault cases on board | Cases in which onboard health care professionals correctly applied the procedure, including collection of evidence samples, post-exposure prophylaxis and emergency contraception | 100% of cases | Medical records |
| Occupational medicine | Evidence of implementation of onboard prevention procedures for crew members | 1) Evidence of at least one ongoing prevention campaign on board (cardiovascular risk, smoking cessation, obesity, alcohol misuse, drug use, mental health conditions); 2) no emergency disembarkations of crew members for decompensated diabetes or asthma attacks; 3) seasonal influenza vaccination coverage at least equal to that recorded in the same season among young adults in the general population | MLC 2006 |
| Healthcare risk management | Evidence of implementation of a clinical risk management system on board | Evidence of completion of near-miss and adverse-event forms; evidence of participation in at least | |


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| | | | |
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| | | one annual clinical audit (including at company level) | |


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## 4. Requirements for Accreditation of Training Centres

Minimum requirements: university scientific leadership; clinical simulation and hygiene/environmental laboratories; multiprofessional teaching staff. Annual audit of: training outcomes (OSCE), onboard learner outcome indicators (stabilisation times, recovery on board, evacuations), and benchmarking against TMAS datasets.

Structural requirements: university scientific leadership; multidisciplinary teaching staff; clinical simulation (M1) and hygiene/environmental laboratories (M2); placements in hospital health care facilities and on board ships, devices (M3) and TMAS platforms (M5); STCW/MLC regulatory unit (M4). Processes: curriculum aligned with the matrix; standardised OSCEs; learner outcome indicators (see KPIs) benchmarked against TMAS; annual external audit of teaching staff, equipment, OSCE success rates and KPIs in the linked fleet; three-year certification with maintenance through maritime CME/ECM and KPI reporting.

### 4.1. Audit Scheme (Training Centres and Linked Fleet)

1) Annual plan: training objectives and fleet KPIs or Shipowners' Associations.

2) Data collection: OSCEs, outcomes, KPIs, outbreak reports and onboard inspections (VSP/SHIPSAN); data from the company health care risk management system; process, result and outcome indicators relating to onboard health care.

3) External verification: audit of a sample of courses/assessments, infrastructure and teaching staff.

4) Feedback & improvement: corrective actions and updating of modules/simulations.

5) Annual report: submission to the Ministry/Technical Working Group with TMAS/CIRM benchmarking and recommendations.

6) Learner satisfaction questionnaires.

## 5. Stakeholder Integration OMITTED


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