

SEPTEMBER 2015
DG EMPLOYMENT, SOCIAL AFFAIRS AND INCLUSION

Evaluation of the Practical Implementation of the EU Occupational Safety and Health (OSH) Directives in EU Member States

REPORT BY DIRECTIVE: DIRECTIVE 92/29/EEC - MEDICAL TREATMENT ON BOARD
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List of abbreviations

Acronym	Definition
CPMs	Common Processes and Mechanisms
CSR	Country Summary Reports
CVD	Cardiovascular disease
ECG	Electrocardiogram
ECSA	European Community Shipowners' Associations
EMSA	European Maritime Safety Agency
EQC	Evaluation question Coherence
EQE	Evaluation question on Effectiveness
EQR	Evaluation question on Relevance
ESAW	European Statistics on Accidents at Work
ESENER	European Survey on New and Emerging Risks
ETF	European Transport Workers' Federation
EU	European Union
EU-OSHA	European Agency for Safety and Health at Work
EWCS	European Working Conditions Survey
ILO	International Labour Organisation
IMO	International Maritime Organisation
KR	Key requirement
LFS	Labour Force Survey
LSA	Life-Saving Appliances
MLC	Maritime Labour Convention
MQ	Mapping question
MS	Member State
NIR	National Implementation Report
OSH	Occupational Safety and Health
OSH	Occupational Safety and Health
SME	Small and medium sized enterprises
SME	Small and medium-sized enterprises
STCW	(IMO Convention on) Standards of Training, Certification and Watchkeeping for Seafarers
WHO	World Health Organisation

Executive summary

Introduction and background

The present report is a directive-specific report, which forms part of the overall reporting of the evaluation of the 24 Directives on occupational Safety and Health (OSH) commissioned by the European Commission. The aim of the evaluation is to evaluate the practical implementation of EU OSH Directives in Member States with a view to assessing their relevance, effectiveness and coherence, and identifying possible improvements to the regulatory framework. This report presents the evaluation of Directive 92/29/EEC Medical treatment on board vessels, which we refer to as the Medical treatment on board vessels Directive.

The evaluation covers 24 Directives consisting of a Framework Directive (89/391), which describes the overall responsibilities of workers and employers and forms the basis of the specific 23 OSH Directives, including the Medical treatment on board vessels Directive.

The main report provides a comprehensive overview of cross-cutting findings, conclusions and recommendations from the evaluation. The report includes the 24 directive-specific reports (enclosed in appendix A in the main report) and 27 Country Summary Reports (CSRs) on implementation of the Directives in the Member States (enclosed in appendix B in the main report). Furthermore, the main report is complemented by a synthesis report providing a summarised version of the key findings, conclusions and recommendations.

Methodology

The evaluation is based on the analysis of transposition and the implementation of OSH legislation in each Member State, official statistics at national and EU level, National Implementation Reports (NIRs) submitted to the Commission by Member States in 2013, scientific literature, existing studies and interviews with national and EU stakeholders. However, statistical data on the compliance in enterprises and the health and safety impact is limited, because EU data from the water transport sector is not available. Thus, we had to rely on other sources of information. The analyses of the effectiveness is therefore primarily based on data from the available scientific literature, which only covers a few Member States (the UK, Denmark and Poland). Likewise, the analysis of the compliance is based on more qualitative information.

The Medical treatment on board vessels Directive

The Directive applies to the safety and health of workers on board any vessel flying the flag of a Member State, or registered under the plenary jurisdiction of a Member State. However, the Directive excludes port pilots and shore personnel carrying out work on board a vessel at the quayside in its definition of workers. However, the Directive contains requirements that only apply to vessels of more than 500 gross registered tonnes, with a crew of 15 or more workers and engaged in a voyage of more than three days. Furthermore, the Directive contains specific requirements for vessels with a crew of 100 or more workers engaged in an international voyage of more than three days, requiring the presence of a doctor responsible for medical care, on board.

Objective

The objective of this Directive is to supplement the Framework Directive by introducing specific measures, hereunder a number of minimum requirements as regards medical supplies and medicine chests, to encourage improvements of the safety and health of workers on board vessels.

The Medical treatment on board vessels Directive does not seek to prevent or eliminate exposure to potentially dangerous working conditions. In contrast, the Directive aims to ensure adequate health care in case of an accident and illness. Such diseases are not only restricted to occupational diseases. For instance, cardiovascular diseases (CVDs) are one of the most common reasons for serious medical emergencies (apart from accidents) at sea. Serious and potentially life threatening accidents and diseases require a fast diagnosis and initiation of proper treatment. This is clearly a challenge in a workplace characterized by geographical isolation. On this background, the Directive includes the following obligations:

- › **Information for workers** addresses the obligation that medical supplies must be accompanied by guidelines regarding their use.
- › **Training of workers** addresses the obligation that all persons who receive professional maritime training and/or intend working on board a vessel, must undergo basic training in medical and emergency measures, and that a periodical special training must be given to those responsible for management and distribution of medical supplies.
- › **Minimal requirements regarding medical supplies** concern access to a number of different medicines and medical equipment.
- › **Minimal requirements regarding watertight medicine chests** concern access to different medicines and medical equipment on life-rafts and life-boats.
- › **Sick-bays** concern the requirement of maintaining a sick-bay in which medical treatment can be administered under safe, hygienic conditions.
- › **Doctor on board** concerns the requirement to ensure that every vessel with a crew of 100 workers or more, engaged on a voyage of more than three days, has a doctor who is responsible for the medical care of the workers on board.

- › **Antidotes** concern the requirement that vessels carrying any dangerous substances also carry, as a minimum, the antidotes specified in Annex II, i.e. antidotes for cardio-vascular issues, gastro-intestinal systems, nervous systems etc.
- › **Responsibility of the owner and captain** specifies who must ensure that medical supplies are available and replenished, and who, in an emergency, must ensure that the required medicine, medical equipment and antidotes, if not available on board, are procured as quickly as possible.
- › **Medical consultation by radio** specifies that Member States must ensure that one or more centres are designated to provide workers with free medical advice, by radio, from doctors trained in the special conditions prevalent on board vessels.
- › **Inspection** specifies that Member States must carry out an annual inspection of medical supplies on board the vessel, and that all minimum requirements, storage facilities and expiry dates meet Directive specifications.

Implementation

The majority of the Member States have transposed the Directive and about half have more detailed/stringent requirements, for instance regarding sick bays and medical doctors on board vessels. Most Member States with a fishing or merchant fleet already had legislation setting requirements regarding the availability of medical supplies and medical assistance on board. Likewise, in some Member States, radio-consultation services already existed and compulsory training in health was also in place.

The available evidence on compliance at the enterprise level is weak and fragmented, which hampers firm conclusions about the compliance level. However, available data from a few Member States indicates that compliance is generally at a medium level. Moreover, a previous implementation report concluded that compliance is high, and that enterprises have implemented the Directive as required – but with lower compliance among SMEs and fishing vessels compared to the merchant fleet.

Several Member States have a special authority, for instance under a ministry of transportation, shipping or environment, responsible for the enforcement of the Directive. However, accompanying actions at Member State level to increase compliance in enterprises are scarce. Actions mainly pertain to guidance documents, whereas more active actions, such as awareness raising campaigns, are rare. At EU level some actions have been initiated e.g. by EMSA. Furthermore, other global actors like IMO, ILO and WHO also play a role in terms of developing accompanying actions.

Relevance

The evaluation of the relevance includes the present and future relevance of the Directive. No reliable data on the number of workers covered by the Directive exists. However, compared to other directives, the Medical treatment on board vessels Directive covers a somewhat narrower group of European workers. Moreover, as mentioned, the Directive does not aim to prevent the occurrence of accidents. However, the consequences of not getting fast treatment after for

instance a heart attack will have severe and even fatal consequences for the worker. In addition, it should be borne in mind that the provisions have implications for those travelling as passengers, not just crew, thus widening the potential relevance of this Directive.

It is difficult to assess the Directive's relevance in the future, as available data does not indicate whether there will be an increase or a decrease in the need for medical treatment on board vessels. Moreover, several factors might enhance and reduce its relevance. For instance, the reduction in the number of crew members on board vessels might decrease the Directive's relevance (as several of the provisions in the Directive depends on crew size). On the other hand, new technological opportunities in telemedicine could increase its relevance. Telemedicine has the potential of bringing benefits to patients in rural areas by facilitating timely access to high-quality healthcare services. Technological advances have opened new possibilities, for instance by broadening the scope from radio counselling to sending e-mails and video conferences.

Effectiveness

As the Directive only covers provisions related to managing accidents and ill health (and not prevention), it is unlikely that the Directive in itself has had a major impact on mortality and the incidence of accidents. Time series data on the rate of fatalities, at a European level, is not available. However, research data is available from some Member States, including Denmark, Poland and the UK.

National data from these Member States shows that the prevalence of fatal accidents have fallen among seafarers in the merchant fleet. However, trends in the fishing industry seem to be less positive

While fatal accidents have fallen in several Member States, this downward trend initiated before the introduction of the Directive, suggesting that other factors have played a role as well. For instance, researchers have reported a considerable change in the working and living conditions of the seafarers characterised by a lower average number of crew members and, as a consequence of modern ship techniques, a higher level of responsibilities for each seafarer. Moreover, more frequently changing crews might hamper the development of a confidential social system on board.

As the number of injuries has decreased, cardiovascular diseases (CVD) have become the most common cause of death on board. In the 1980s and the 1990s, deaths due to CVD accounted for 55-70% of all natural causes of death among seamen on British and Danish merchant ships.

Coherence

We did not identify issues of internal coherence between the Medical treatment on board vessels Directive and the other OSH Directives. With regard to external coherence, a few inconsistencies and overlaps were found between the Medical treatment on board vessels Directive and Directive 2009/13/EC implementing the Social Partners Agreement on the Maritime Labour Convention (MLC), Directive 2008/106/EC on the Minimum level of training of seafarers and the Social Partner Agreement concerning the implementation of the ILO Work in Fishing Convention of 2007. The inconsistencies, however, only involve a limited number of more detailed requirements in the international instruments and implementing Directives.

Recommendations

We now present the main recommendations based on the findings from the evaluation:

- › Because the Directive does not address preventive measures, it is unlikely that the Directive has had an effect on the prevalence of accidents. However, the Directive could have had some effect on survival rates after an accident and/or serious illness. It should be noted that the evidence base is very limited, both for workplace and health and safety effect, so no firm conclusion can be drawn. However, the analysis points to changes in the disease patterns on board vessels. As the number of accidents have been reduced, today, CVD is the most frequent cause of death. We therefore recommend that further emphasis is put on preventive initiatives to reduce risk factors related to CVDs, i.e. in terms of ensuring healthy nutrition and physical exercise on board ships. Moreover, future medical courses could also put additional focus on the prevention and treatment of CVDs.
- › The available literature shows that telemedicine represents the most realistic option for medical care on board vessels and technical advance has broadened the scope of telemedicine from radio consultations to e-mails and video conferences. Thus, telemedicine is an important venue for improving diagnostics and treatment on board vessels for acute, and non-acute, medical emergencies. Moreover, the new technological advances in telemedicine could increase the relevance of the Directive. Supporting the use of new technology could therefore contribute towards a further reduction in mortality.
- › The evaluation points to external inconsistencies in the legislation. While this does not lead to double regulation, for the sake of legal clarity and to avoid confusion, the removal of requirements on medical treatment under Directive 2009/13/EC and Directive 2008/106/EC, which are already covered by Directive 92/29/EC, could be envisaged. This would avoid confusion in the application of medical treatment requirements on board vessels. In addition, the provisions of Directive 92/29/EC could be aligned with the provisions on medical treatment of the ILO Maritime Labour Convention, 2006 (i.e. access to medical teleconsultation), of the ILO Work in Fishing Convention, 2007 (i.e. access to medical teleconsultation and guide and information in a language and format understood by the fishermen) and the IMO Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) (i.e. specific medical training on-board seagoing commercial vessels).

1 Introduction

About this report

This directive-specific report forms part of the overall reporting requirements of the evaluation of 24 Directives on Occupational Safety and Health (OSH) commissioned by the European Commission. The report concerns Directive 92/29/EEC - Medical treatment on board vessels, hereon referred to as the "Medical treatment on board vessels Directive".

Evaluation of OSH Directives

The evaluation of 24 OSH Directives was initiated in 2013 and finalised in June 2015. The evaluation produced cross-cutting findings on the implementation of the 24 Directives, which are documented in the main report. Annexed to this main report are directive-specific reports for each of the 24 Directives (appendix E) and reports on the implementation of the 24 Directives in the Member States (MSs) (appendix G comprising 27 reports as Croatia was excluded from the study).

Objective of the evaluation

The objective was to evaluate the practical implementation of the EU OSH Directives in EU MSs with a view to assessing their impact and identifying their strengths and weaknesses in order to suggest possible improvement to the regulatory framework. Two sets of questions, and subsequent evaluation criteria, were formulated to address and clarify the various impacts of the Directives within the MSs.

The first set dealt with the implementation of the Directives within the MSs:

- › **Implementation:** MQ1-MQ7 are mapping questions which, apart from addressing the overall implementation of the Directives, looks at specific implementation issues, such as derogations, transitional periods, compliance and enforcement.

MQ1: Across the Member States, how are the different Common Processes and Mechanisms foreseen by the Directives put in place, and how do they operate and interact with each other?

MQ2: What derogations and transitional periods are applied or have been used under national law under several of the Directives concerned?

MQ3: What are the differences in approach to and degree of fulfilment of the requirements of the EU OSH Directives in private undertakings and public-sector bodies, across different sectors of economic activity and across different sizes of companies, especially for SMEs, microenterprises and self-employed?

MQ4: What accompanying actions to OSH legislation have been undertaken by different actors (the

Commission, the national authorities, social partners, EU-OSHA, Eurofound, etc.) to improve the level of protection of safety and health at work, and to what extent are they actually used by companies and establishments to pursue the objective of protecting safety and health of workers? Are there any information needs that are not met?

MQ5: What are the enforcement (including sanctions) and other related activities of the competent authorities at national level and how are the priorities set among the subjects covered by the Directives?

MQ6: What are the differences in approach across Member States and across establishments with regard to potentially vulnerable groups of workers depending on gender, age, disability, employment status, migration status, etc., and to what extent are their specificities resulting in particular from their greater unfamiliarity, lack of experience, absence of awareness of existing or potential dangers or their immaturity, addressed by the arrangements under question?

MQ7: What measures have been undertaken by the Member States to support SMEs and microenterprises (e.g. lighter regimes, exemptions, incentives, guidance, etc.)?

The second set addressed the three main evaluation criteria, which were relevance, effectiveness and coherence (a total of 11 evaluation questions):

- › **Relevance:** EQR1-EQR2 relate to the extent to which Directive provisions are relevant for current and future risks as well as the composition of industrial sectors:

EQR1: To what extent do the Directives adequately address current occupational risk factors and protect the safety and health of workers?

EQR2: Based on known trends (e.g. new and emerging risks and changes in the labour force and sectoral composition), how might the relevance of the Directives evolve in the future, and stay adapted to the workplaces of the future in light of the horizon of 2020? Does the need for EU level action persist?

- › **Effectiveness:** EQE1-EQE7 explore whether or not the introduction of a Directive has led to changes in the enterprise behaviour and the occupational safety and health of workers:

EQE1: To what extent has the Directive influenced workers' safety and health, the activities of workers' representatives, and the behaviour of establishments?

EQE2: What are the effects on the protection of workers' safety and health of the various derogations and transitional periods foreseen in several of the Directives concerned?

EQE3: How and to what extent do the different Common Processes and Mechanisms that were mapped contribute to the effectiveness of the Directives?

EQE4: To what extent do sanctions and other related enforcement activities contribute to the effectiveness of the Directives?

EQE5: What benefits and costs arise for society and employers as a result of fulfilling the requirements of the Directives?

EQE6: To what extent do the Directives generate broader impacts (including side effects) in society and the economy?

EQE7: To what extent are the objectives achieving their aims and, if they are not, what cause could play a role? What factors have particularly contributed to the achievement of the objectives?

- › **Coherence:** EQC1-EQC2 address the extent to which objectives and actions from a given OSH Directive interact, or overlap, with other OSH Directives and/or with other EU policies:

EQC1: What, if any, inconsistencies, overlaps, or synergies can be identified across and between the Directives (for example, any positive interactions improving health and safety outcomes, or negative impact on the burdens of regulation)?

EQC2: How is the interrelation of the Directives with other measures and/or policies at European level also covering aspects related to health and safety at work, such as EU legislation in other policy areas (e.g. legislation: REACH, Cosmetics Directive, Machinery Directive, policy: Road Transport Safety, Public Health, Environment Protection), European Social Partners Agreements or ILO Conventions?

Methodology and sources of information

The overall methodology applied for the evaluation – and thus also for the analysis presented in this report – is presented in detail in chapter 2 of the main report.

These directive-specific report findings are based on the analysis of the OSH legislation in each of the MSs, official statistics at national and EU level, National Implementation Reports (NIRs) submitted to the Commission by each of the MSs by the end of 2013 as well as scientific articles, existing studies and interviews with both national and EU stakeholders.

Report structure

The report is structured according to the themes and issues listed above.

- › Chapter 2 presents the overall understanding of the Directive, i.e. its rationale, its provisions and its intervention logic. It also describes issues relating to measuring impacts resulting from the Directive.
- › Chapter 3 presents relevant findings on the implementation of the Directive in the MSs (addressing questions MQ1-MQ7).
- › Chapter 4 presents relevant findings on the relevance of the Directive (addressing questions EQR1-EQR2).
- › Chapter 5 presents relevant findings on the effectiveness of the Directive (addressing questions EQE1-EQE4).
- › Chapter 6 presents relevant findings on the coherence of the Directive (addressing questions EQC1-EQC2).
- › Chapter 7 describes the main conclusions emanating from the findings presented in chapters 3-6.

2 The Directive

2.1 Background and objective

Background

The Medical treatment on board vessels Directive is one of the individual directives under the Framework Directive. Together with Directive 93/103/EC on Work on board fishing vessels, the Medical treatment on board vessels Directive is one of the two sector-specific directives that focus on the health and safety of seafarers and fishermen.

In the preamble to the Directive, it is acknowledged that a vessel represents a workplace with a wide range of specific risks due to its mobility and its geographical isolation.

Objective

On this background, the Medical treatment on board vessels Directive was designed to supplement the Framework Directive by introducing specific measures, hereunder a number of minimum requirements as regards medical supplies and medicine chests, to encourage improvements to the safety and health of workers on board vessels.

2.2 Risks

Risks in Medical treatment on board vessels Directive

Although no specific risks or types of occupational accidents or diseases as such are highlighted in the Medical treatment on board vessels Directive, emphasis is placed on risks resulting from the fact that vessels are often far from shore and therefore have limited access to medicine, trained personnel on board and the fact that access to medical consultation, by radio, is crucial. Thus, this Directive is not concerned with the prevention of occupational risks, but aims to protect health and safety in terms of reducing the negative effects of exposure to accidents at work and/or falling ill while at sea. We have divided the related health impacts into acute and long-term impacts, specified in Table 2-1.

Table 2-1 *Acute and long-term health impacts*

Risks
<p>Acute and long-term health impacts</p> <p>Higher rate of fatalities and fatal accidents</p> <p>Lower survival and recovery after work-related accidents and serious illness</p>

2.3 Provisions

Scoping and definition

Table 2-2 shows that the Directive applies to the safety and health of workers on board any vessel flying the flag of a MS, or registered under the plenary jurisdiction of a MS.

However, the Directive contains requirements that only apply to vessels of more than 500 gross registered tonnes, with a crew of 15 or more workers and engaged in a voyage of more than three days. Furthermore, the Directive contains specific requirements for vessels with a crew of 100 or more workers, engaged in an international voyage of more than three days, requiring the presence of a doctor responsible for medical care on board.

The Directive excludes port pilots and shore personnel carrying out work on board a vessel at the quayside in its definition of workers.

CPMs and other KRs

Table 2-2 lists the provisions, which have been evaluated as particularly important, when assessing the Directive's impact. Hence, the assessment focuses on the so-called Common Processes and Mechanisms (CPM) and other KRs. It shows, however, that the Directive does not place much more emphasis on the CPMs than the Framework Directive does. In other words, it relies on the Framework Directive's provisions on aspects such as risk assessment, preventive and protective services, health surveillance and consultation of workers. The additional aspects relating to CPM, which the Directive focuses on, are:

- › **Information for workers** addresses the obligation that medical supplies must be accompanied by guidelines regarding their use.
- › **Training of workers** addresses the obligation that all persons who receive professional maritime training and/or intend working on board a vessel, must undergo basic training in medical and emergency measures, and that a periodical special training must be given to those responsible for management and distribution of medical supplies.

The other KRs of the Directive are shown in Table 2-2:

- › **Minimal requirements regarding medical supplies** concern access to a number of different medicines and medical equipment.
- › **Minimal requirements regarding watertight medicine chests** concern access to different medicines and medical equipment on life-rafts and life-boats.

- › **Sick-bays** concerns the requirement of maintaining a sick-bay in which medical treatment can be administered under safe, hygienic conditions.
- › **Doctor on board** concerns the requirement to ensure that every vessel with a crew of 100 workers or more, engaged on a voyage of more than three days has a doctor who is responsible for the medical care of the workers on board.
- › **Antidotes** concerns the requirement that vessels carrying any dangerous substances also carry, as a minimum, the antidotes specified in Annex II, i.e. antidotes for cardio-vascular issues, gastro-intestinal systems, nervous systems etc.
- › **Responsibility of the owner and captain** specifies who must ensure that medical supplies are available and replenished, and who, in an emergency, must ensure that the required medicine, medical equipment and antidotes, if not available on board, are procured as quickly as possible.
- › **Medical consultation by radio** specifies that MSs must ensure that one or more centres are designated to provide workers with free medical advice, by radio, from doctors trained in the special conditions prevalent on board vessels.
- › **Inspection** specifies that MSs must carry out an annual inspection of medical supplies on board the vessel, and that all minimum requirements, storage facilities and expiry dates meet Directive specifications.

Table 2-2 Key requirements for the Medical treatment on board vessels Directive

Directive 92/29/EEC on the minimum safety and health requirements for improved medical treatment on board vessels						
Key requirements: Scoping and definitions						
Scope of application Arts. 1 and 2a	The Directive applies to the protection of the safety and health of workers on board a vessel, i.e. any vessel flying the flag of a MS, or registered under the plenary jurisdiction of a MS, seagoing or estuary-fishing, publicly or privately owned, excluding inland navigation vessels, warships, pleasure boats used for non-commercial purposes and not manned by professional crews and tugs operating in harbour areas.					
Scope of application Arts. 1 and 2b	The Directive applies to workers, excluding port pilots and shore personnel carrying out work on board a vessel at the quayside.					
Scope of application - threshold Art. 2.3	Vessels of more than 500 gross registered tonnes with a crew of 15 or more workers and engaged in voyage of more than three days are required to have a sick bay.					
Scope of application - threshold Art. 2.4	Vessels with a crew of 100 or more workers and engaged in international voyage of more than 3 days are required to have a doctor responsible for medical care on board.					
Key requirements: Common processes and mechanisms						
CPM	Conducting a risk assessment	Ensuring internal and/or external preventive and protective services	Information for workers	Training of workers	Health surveillance	Consultation of workers
Relevant Articles	N/A	N/A	5	5	N/A	N/A
Key requirements: Directive-specific provisions						
Minimal requirements as regards medical supplies Art. 2.1	MSs shall ensure that every vessel flying its flag or registered under its plenary jurisdiction carries medical supplies of at least the quality, quantity and content as specified in Annexes II and IV.					
Minimal requirements as regards watertight medicine chests Art. 2.2	MSs shall ensure that for each of its life-rafts and life-boats, every vessel carries a watertight medicine chest at least containing the medicinal supplies as specified in Annex II.					
Sick-bays Art. 2.3	MSs shall ensure that every vessel of more than 500 gross registered tonnes, with a crew of 15 or more workers and engaged on a voyage of more than three days has a sick-bay.					
Doctor on board Art. 2.4	MSs shall ensure that every vessel with a crew of 100 workers or more and engaged on a voyage of more than three days has a doctor responsible for medical care of the workers on board.					
Antidotes Art. 3	MSs shall ensure that any vessel carrying any dangerous substances carries on board at least antidotes specified in Annex II. The contents of the medical supplies, as regards antidotes, must be detailed on a checklist.					
Responsibility of the owner and of the	Each MS shall take measures necessary to ensure the allocation of responsibilities for the provision and replenishment of medical supplies and their management between the					

captain Art. 4.1	subjects and according to the principles specified therein.
Medical consultations by radio Art. 6	MSS must ensure that one or more centres are designated to provide workers with free medical advice by radio by doctors, where some have been trained in the special conditions prevailing on board a vessel.
Inspection Art. 7	MSS shall ensure that an annual inspection is carried out of the medical supplies in terms of fulfilment of the minimum requirements, storage and expiry dates.
Non-key Directive-specific provisions	
<p>The following Directive-specific provisions are not considered to constitute key requirements in the context of the evaluation:</p> <ul style="list-style-type: none"> > provisions of a technical nature, i.e. provisions laying down the procedure for amending annexes, transposition and communication to the Commission and addressees (Arts. 8-9, 10); > provisions supplementing the core obligation to carry on board medical supplies regarding the condition and replenishment/replacement of supplies (Art. 4.2), availability of supplies in case of emergency (Art. 4.3) and timing for inspections on life-rafts (Art. 7.2); > provisions supplementing the core obligation to ensure free medical advice by radio (Art. 6.2) regarding personalised medical records); > provision establishing the MSS' reporting obligation to the Commission under the Directive (Art. 9a). 	

2.4 Intervention logic

Impact logic

The assessment of the impact of the Directive, as explained in detail in the methodology chapter of the main report, builds upon the development of an intervention logic that answers the three fundamental evaluation questions: impact *of what?*, impact *for whom?*, and impact *on what?*. These three questions are answered using four logical steps:

- > **CPMs and other KRs** are those provisions of the Directive which, during the analysis, were identified as those requiring particular attention when assessing the impact. In other words, they define the effect that the Directive has had on a particular sector/environment/individual (impact *on what?*).
- > **Workplace impacts** defines the direct change/improvement (impact *on what and/or whom?*) that occurs at a workplace as a result of implementing the KRs. For instance, better safety and health surveillance, organisational changes, greater awareness among workers about potential safety and health issues, etc. These changes come at a cost to the workplace, but are also the drivers that ensure that safety and health impacts do occur.
- > **Safety and health impacts** constitute the actual elimination, and/or reduction, of safety and health risks (impact *on what?*) for the workers (impact *for whom?*) arising as a result of the Directive (KRs) through the above-mentioned workplace impacts.

- › **Broader impacts** constitute the economic and social impacts (impact *on what?*) that may affect society (impact *for whom?*) as a result of the above-mentioned safety and health impacts.

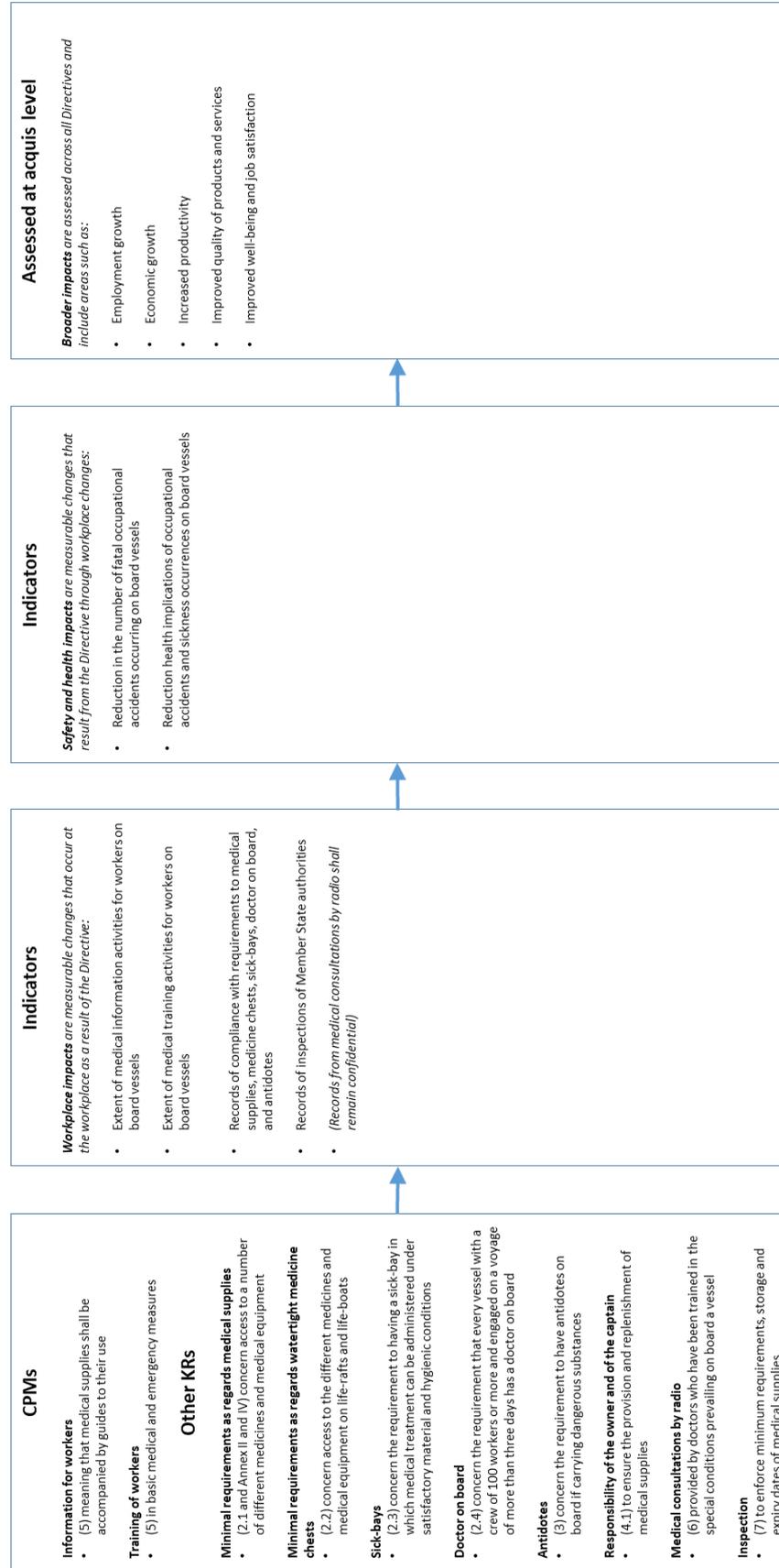
Impact storyline

The assessment of the Directives' health and safety impacts are presented in the following chapters, particularly in chapter 5 on the effectiveness. The evaluation takes its starting point in an impact storyline, shown in Figure 2-1. An OSH expert within the evaluation team has made an initial hypothesis for the intervention logic, i.e. identified the expected impact resulting from implementing the directives. These expected impacts have then been analysed using data gathered from statistics, studies and interviews.

Figure 2-1 shows that by placing additional emphasis on the CPMs pertaining to the Medical treatment on board vessels Directive, i.e. information to workers and training activities, treatment capacity will be enhanced. Furthermore, the emphasis placed on requirements to medical supplies and other medical treatment facilities is expected to optimise their use.

As already mentioned, while medical treatment facilities may not contribute towards reducing the number of occupational accidents on board vessels, they may reduce fatalities and/or severe complications.

Figure 2-1 Intervention logic for Medical treatment on board vessels Directive



2.5 Measuring impacts

Three levels of impacts

In continuation of the above impact storyline, the assessment as to whether the initial impact hypotheses proves to be correct requires that impacts are analysed at three levels; namely (i) workplace impacts; (ii) safety and health impacts; and (iii) broader impacts. Two important factors must be considered:

- 1 While workplace impacts do not necessarily reveal information on health and safety impacts, they can provide indications of the latter.
- 2 As indicated in the intervention logic, the broader effects of the Directive are assessed at the *acquis* level presented in the main report.

Indicators must be quantifiable

Furthermore, the assessment requires that, in practice, the indicators are quantifiable. A set of indicators has, in this context, been developed by an OSH expert. This set represents the workplace and safety and health impacts that, *ideally*, should be considered when evaluating the Directive (see Figure 2-1 and Table 2-3).

Table 2-3 *Impact indicators*

Workplace impacts	Safety and health impacts
<p>Extent of medical information activities for workers on board vessels</p> <p>Extent of medical training activities for workers on board vessels</p> <p>Records of compliance with requirements to medical supplies, medicine chests, sick-bays, doctor on board, and antidotes</p> <p>Records of inspections of MS authorities</p> <p>(Records from medical consultations by radio shall remain confidential¹)</p>	<p>Reduction in the number of fatal occupational accidents occurring on board vessels</p> <p>Reduction in health implications of occupational accidents and sickness occurrences on board vessels</p>

Statistics available for analysing impacts

It should be noted that although an indicator is potentially quantifiable, it does not necessarily mean that sufficient data exists to provide comprehensive information on the indicator. Hence, Table 2-3 should be seen as a list of ideal indicators.

Hence, based on Table 2-3, Table 2-4 would normally provide an overview of identified data variables and statistical sources, which would provide useful information on the above indicators in the evaluation of the Medical treatment on board vessels Directive. It should also be emphasised that the assessment of workplace and the safety and health impacts, within this evaluation are based on

¹ Radio Medical Danmark publishes annual reports that in general terms describe the level of activities, <http://www.radiomedical.eu/>.

the results of existing studies and stakeholder opinions gathered through interviews.

Table 2-4 Available statistics for impact indicators

Workplace impacts	Variable	Source
None		
Safety and health impacts	Variable	Source
None		

Data challenges

As Table 2-4 shows, we face challenges regarding the availability of statistical data on the impact of this Directive. One of the reasons for the lack of EU data on issues such as information to workers and training activities is that neither European Survey on New and Emerging Risks (ESENER) nor European Working Conditions Survey (EWCS) cover the water transport sector (in EWCS, the water transport sector is grouped together with transport and communication).

Data for analysing the safety and health impacts for the water transport sector (NACE Rev.2: 50) can be extracted from the Eurostat search database. However, special data extraction criteria are required when using the Labour Force Survey (LFS) database, if it is to cover sea and coastal water passenger transport (NACE Rev.2: 50.1) and/or sea and coastal water freight transport (NACE Rev.2: 50.2). It will still be difficult to assess the number of fatal accidents and/or severe health implications resulting from a lack of medical treatment.

The European Maritime Safety Agency (EMSA) also registers records of occupational accidents at sea. These records, however, only give a rough estimate on the crude number and type of accident. Consequently, this data cannot be used to assess tendencies and/or trends over a given time span.

We therefore have to rely on other sources of information such as scientific studies, previous evaluation reports and national registers on fatalities and accidents on board vessels.

3 Implementation in Member States

Implementation evaluation through seven mapping questions

As part of the evaluation, a mapping exercise on the implementation of the 24 Directives in the MSs was carried out following seven mapping questions (MQs). This chapter provides a summary of the findings from the mapping exercise, which are relevant to the Medical treatment on board vessels Directive. Information was collected from 27 MSs, including the NIRs, and documented in the evaluation's Country Summary Reports (CSRs), which forms the basis for our findings. EU level information sources have also been used, where relevant.

Structure of this chapter

The chapter is structured according to the seven mapping questions. For the purpose of presenting information across MSs, we have used country codes in the tables².

3.1 MQ1: Transposition

MQ1: Across the Member States, how are the different Common Processes and Mechanisms foreseen by the Directives put in place, and how do they operate and interact with each other?"

The first mapping question focuses on the two CPMs (ref. section 2.3), i.e. to inform and train workers. We look at how the CPMs have been transposed in the MSs, and whether there have been any infringement proceedings or inconsistencies in relation to transposition. We also consider the extent to which the MSs have implemented more detailed or stringent requirements than those directly specified in the Directive.

Transposition and infringement proceedings

According to the information gathered from MSs, all but three have transposed the Directive (AT, CZ and SK), reflecting a lack of workers in the sector. An infringement procedure was initiated against CY for non-conformity. However, the

² Eurostat country codes: Austria (AT), Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE), United Kingdom (UK).

annexes were transposed, almost verbatim, in many MSs. Moreover, it should also be kept in mind that most MSs with a fishing or merchant fleet already had legislation stipulating requirements to the availability of medical supplies and medical assistance on board vessels. Likewise, in some MSs radio-consultation services already existed and compulsory training in health and safety was also in place [1].

Observed discrepancies in transposition

As part of the analysis of the national implementation, the evaluation has looked for discrepancies, i.e. cases where the text of the national transposing legislation differs from the Directive's requirements. Focus has been placed on identifying inconsistencies directly concerning the CPMs which, in consequence, could lead to the non-application or partial application of the CPMs. Based on the CSRs, we identified no such inconsistencies in the national transposition of the Directive.

More detailed or stringent requirements

The comparison of the Directive key requirements (KRs) with the transposing national legislation indicates that the majority (13 of 27) of MSs (BE, BG, DE, EE, EL, ES, FR, IT, LT, LV, NL, RO and SE) have implemented more detailed or stringent requirements than those specified in the Directive. The more detailed/stringent requirements pertain to:

- › Sick bays (six MSs), include, for instance, more detailed requirements to size and premises and/or more stringent requirement in terms of number of crew
- › Medical doctors (five MSs), include, for instance, requirements on additional doctors or nursing staff
- › Others (five MSs), include, for instance, more detailed definitions on vessels and workers.

Answer to MQ1

The majority of the MSs have transposed the Directive and no inconsistencies in the transposition of the CPMs have been identified in this evaluation. Many of the MSs already had provisions in place and about half have more stringent/detailed requirements.

3.2 MQ2: Derogations and transitional periods

MQ2: What derogations and transitional periods are applied or have been used under national law under several of the Directives concerned?

Answer to MQ2

In the case of the Medical treatment on board vessels Directive, no derogations or transitional periods have been applied.

3.3 MQ3: Compliance

MQ3: What are the differences in approach to and degree of fulfilment of the requirements of the EU OSH Directives in private undertakings and public-sector bodies, across different sectors of economic activity and across different sizes of companies, especially for SMEs, microenterprises and self-employed?

Table 3-1 shows the estimated compliance levels for CPMs, assessed by national experts and based on the available data from the CSRs. The table only includes those MSs for which data on compliance could be obtained, thus the table does not contain an assessment of all MSs.

Table 3-1 Compliance with CPMs in MSs (% of establishments)

Compliance level	Very low	Low	Medium	High	Very high
% of establishments	Below 20%	20-39%	40-59%	60-79%	above 80%
Information	-	-	BE, RO, SK	LT	-
Training	-	BE	RO, SK	LT	-

Source: Country Summary Reports (CSRs).

Table 3-1 illustrates that, generally, the compliance with the CPM requirements in the Directive seems to be at a medium level, however, this assessment is based on information from a limited number of MSs (n=4).

Interview data on compliance

Data from interviews with employers' and workers' organisations at EU level is relatively limited as few of the organisations interviewed held opinions on the Directive (only one organisation). Data from interviews at MS level is also very scarce as few interviewees have commented directly on the Directive. Most have referred to the Framework Directive and explained that they consider the situation to be the same for the Medical treatment on board vessels Directive or have indicated that it is not possible to provide a detailed assessment. Thus, only one interviewee has made a specific assessment suggesting that compliance is generally high – but lower among SMEs.

Data from NIRs

In the National Implementation Reports (NIR), the MSs have provided more qualitative assessments on implementation of the Directive. The manner in which the MSs have responded to questions in the NIRs differs considerably making it difficult to extract a consistent assessment of compliance. MSs were not asked directly to provide data on compliance in the NIRs, except for the question: 'Do SMEs have particular difficulties in following the requirements of the Directive?' Some MSs have, nevertheless, provided some information. In respect to the question on whether SMEs face particular difficulty in implementing the Directive, only few NIRs report specific problems, whereas the majority state that data on compliance in SMEs is not available or that no SMEs exists in the MS.

Several MSs report implementation problems in terms of medical supplies. For instance, one MS mentions that it is, on occasions, difficult to obtain medical supplies in foreign ports as regulations on procuring medicinal products varies from country to country. Moreover, another MS reported that suppliers are uncertain whether they are allowed to supply prescription drugs to merchant ships as they are unsure or unaware of the legal requirements. Finally, some of the MSs also mentioned that international treaties and conventions play an important role in ensuring that attention is given to medical care on board vessels, but that these conventions/treaties do not always align with the Directive's requirements, thereby creating an unnecessary burden for employers.

Other data sources

A previous report on the implementation of the Directive in MSs found that, in general, the Directive has been implemented as required. The high level of compliance is mainly due to a high level of acceptance among professionals and their cooperation with authorities. Thus, the authors of the report assessed that medical treatment on board vessels had improved as a result of the Directive. However, here it should be kept in mind that several MSs already had provisions in place before transposing the Directive (see more under section 3.1). [1]

The report also mentions problems with compliance among SMEs and self-employed, and that compliance is higher in the merchant fleet than in fishing fleets [1]. Moreover, the training of workers (one of the CPMs) varies according to MSs and type of fleet. Training of workers includes a basic course and a refresher course every five years. In many MSs, training every five years is compulsory. However, in some MSs, training is inadequate, and workers and captains on smaller fishing vessels are less likely to have attended training courses.

This is also in line with a recent scientific study carried out in Germany among seafarers, who had completed a medical refresher course during the period from 2006–2013. Researchers interviewed participants about their experience of serious disease and accidents on board. In addition, the seafarers were also asked to answer 18 basic medical questions about common medical issues on board prior to attending the course. The study found that serious emergencies on board were most often related to trauma or CVD. More than 90% of the seafarers gave correct answers to toxicological and infectious questions, and about 60–65% of the seafarers answered questions on hypothermia and medical treatment correctly. Based on study results, the authors concluded that a five-year interval, without any form of refresher course, appears to be too long a period to guarantee adequate medical treatment on board vessels [2].

A Danish study on surveillance of death on board Danish merchant ships from 1986-93 shows that, in 53 cases of natural death (primarily dominated by cardiovascular and infectious diseases), inadequate treatment on board was the main contributing factor to death in most of the cases. Moreover, medical advice was not always sought and the advice given was, in some instances, insufficient [3].

In addition, the evaluation report on the practical implementation of the Directive [1] also points to problems in relation to the replacement of drugs that have past their expiry data, and most doctors prefer to evacuate patients rather than prescribe medication available on board.

Finally, the Directive contains a requirement for MSs to ensure that one or more centres have been designated to provide workers with free medical advice by radio by doctors, some of whom have been trained in the special conditions prevailing on board a vessel. Over the last decade, technological advances have opened new possibilities, and treatment scope has gone from radio counselling to e-mail consultation and video conferences. Data from the Italian Telemedical Maritime Assistance Service (TMAS) shows that, during the period 2010-2012, e-mail consultation increased from 75% in 2010, and 80% in 2011, to 83% in 2012. This reflects an increase in the use of the internet among crew [4].

Answer to MQ3

Taken together, the evidence on the level of compliance with the Directive is weak and fragmented. The limited data available from a limited number of MSs indicates that compliance is generally at a medium level. A previous report on the implementation assesses that the compliance was high and that enterprises had implemented the Directive as required – but with lower compliance among SMEs and fishing vessels compared to the merchant fleet. Finally, one study suggests that a refresher course with a five-year interval might be inadequate. However, as this study was only carried out in one MS, further research is needed before generalising these results to other MSs.

3.4 MQ4: Accompanying actions

MQ4: What accompanying actions to OSH legislation have been undertaken by different actors (the Commission, the national authorities, social partners, EU-OSHA, Eurofound, etc.) to improve the level of protection of safety and health at work, and to what extent are they actually used by companies and establishments to pursue the objective of protecting safety and health of workers? Are there any information needs that are not met?

When answering the fourth mapping question, we distinguish between accompanying actions taken at MS level – mainly based on information presented in the CSRs developed within the present evaluation, and accompanying actions taken at EU level – mainly based on information obtained through desk research and interviews with EU-level stakeholders.

3.4.1 Actions at Member State level

Guidance documents and support tools

We have looked at the various accompanying actions taken at MS level to encourage the implementation of, and compliance with, the Directive. Based on data from the CSRs, we have found that MSs, most often, make use of guidance documents (BG, FI, IT and NL). The number of documents range from one to two per MS. Furthermore, three MSs make use of support tools (DE, IE and UK). No MSs make use of both guidance documents and support tools.

Awareness-raising campaigns, and education and training activities

Through the CSRs, we identified one MS (FR) that had made use of awareness raising campaigns. No MSs had made use of education and training activities. This shows that active accompanying actions are scarce.

The majority of MSs report that the available accompanying actions were insufficient (BG, CY, EE, EL, ES, FI, FR, LT, LU, LV, MT, NL, PL, PT, RO, SE and SI). Moreover, ten MSs (BE, BG, CY, FR, LV, MT, PL, PT, RO and SI) report information gaps, specifically for SMEs.

Financial incentives

No MSs have made use of financial incentives to encourage enterprises to comply with safety and health provisions specifically related to the Directive. It should be noted that several countries have general arrangements for financial incentives – these are described in the Directive report on the Framework Directive.

3.4.2 Actions at EU level

The EU has initiated several accompanying actions to support MSs in their implementation of the Medical treatment on board vessels Directive. In this section, we present the accompanying actions identified during the present evaluation.

An important action performed at EU level was the establishment of a European Maritime Safety Agency (EMSA) via Regulation 1406/2002/EC in 2002. EMSA provides technical and scientific assistance to ensure proper application of EU legislation in the field of maritime safety, monitors its implementation, evaluates its effectiveness, organises training etc.

For instance, EMSA has published material supporting good practice measures in regards to training of personnel and specific emergencies³. EMSA also carries out inspection of training and education facilities in line with the IMO Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) of the International Maritime Organisation (IMO). Training facilities in MSs and non EU MSs are presently being assessed to ensure that the quality of the certificates issued, allowing seafarers to work on EU-registered vessels⁴, is of a similar standard.

IMO and ILO as influential global actors

It should be mentioned, however, that a possible reason for the seemingly limited number of accompanying actions at EU level is most likely due to the fact that other global actors, such as the International Labour Organisation (ILO) and the IMO, have developed influential conventions, which most MSs adhere to. The IMO covers, for example, medical fitness standards in their training material for seafarers. Furthermore, the ILO (2006) includes, in its Maritime Labour Convention (MLC), regulations on occupational health – particularly on medical care on board ship and ashore. It has supplemented this by introducing the ILO (2013) guidelines for medical examination of seafarers to ensure that, medically, they are sufficiently fit to perform their routine and emergency duties at sea and do not suffer from a medical condition likely to be aggravated by service at sea.

Finally, the World Health Organisation (WHO) (2007) also provided an international medical guide for ships, targeted at first-aid providers, to assist in diagnosing, treating and preventing diseases on board vessels.

For more on these issues, please refer to chapter 6: Assessment of coherence.

Answer to MQ4

Accompanying actions at MS level are scarce. Actions pertain mainly to guidance documents, whereas more active actions such as awareness-raising campaigns are rare. Moreover, no MSs have made use of financial incentives specifically targeted the Medical treatment on board vessels Directive. At EU level, some actions have been initiated e.g. by EMSA. Other global actors, such as the IMO,

³ <http://www.emsa.europa.eu/implementation-tasks/ship-safety-standards.html>

⁴ <http://www.emsa.europa.eu/implementation-tasks/visits-and-inspections/training-of-seafarers.html>.

ILO and WHO, have also played a role in terms of developing accompanying actions.

3.5 MQ5: Enforcement

MQ5: What are the enforcement (including sanctions) and other related activities of the competent authorities at national level and how are the priorities set among the subjects covered by the Directives?

Authorities and strategies

The data from the national analysis shows that the MSs typically have a general enforcement authority responsible for OSH enforcement and inspections related to all, or the majority, of OSH matters⁵, and that no MSs have special enforcement strategies. However, regarding the enforcement of the Medical treatment on board vessels Directive, at least 13 MSs (CY, DE, EE, EL, FR, IE, IT, NL, PT, RO, SE, DK and SI) have a special authority – typically under a ministry of transportation, shipping and/or environment.

Answer to MQ5

Several MSs have a special authority, for instance under a ministry of transportation, shipping or environment, responsible for the enforcement of the Medical treatment on board vessels Directive. However, to the best of our knowledge, no specific enforcement strategies have been initiated.

3.6 MQ6: Vulnerable groups

MQ6: What are the differences of approach across Member States and across establishments with regard to potentially vulnerable groups of workers depending on gender, age, disability, employment status, migration status, etc., and to what extent are their specificities resulting in particular from their greater unfamiliarity, lack of experience, absence of awareness of existing or potential dangers or their immaturity, addressed by the arrangements under question?

Answer to MQ6

The findings from the national studies show that most MSs have a general approach towards vulnerable groups, which are not targeted by specific directives (except those directives, which are specifically designed to address vulnerable groups).

3.7 MQ7: SMEs and microenterprises

MQ7: What measures have been undertaken by the Member States to support SMEs and microenterprises (e.g. lighter regimes, exemptions, incentives, guidance, etc.)?

Exemptions, lighter regimes and incentives

The data collected from the MSs shows that development of specific measures to support SMEs, which are only relevant to the Medical treatment on board vessels Directive, is uncommon. Some MSs have general measures supporting SMEs,

⁵ Reference is made to the Directive report on implementation of the Framework Directive, which provides a summary of the general systems in force.

which fall under the Framework Directive and are described in the Framework Directive report. The data collected has shown that only one MS (SE) has implemented lighter regimes for SMEs and microenterprises.

Answer to MQ7

Only one MS has made use of lighter regimes for SMEs. No MSs have made use of other measures.

4 Assessment of relevance

Relevance in relation to relevant work and workforce

In this section, the relevance of the Directive is investigated in relation to coverage of the workforce and MSs and the severity and extent of risks covered. The conclusions from the five parameters used to assess relevance are summarised in the table below.

Table 4-1 Summary of the five relevance parameters

Coverage of workforce and Member States		Accidents and health problems		
Number of Member States where the Directive is potentially relevant	Proportion of EU workforce to whom the Directive is potentially relevant	Fatal accidents at work (per 100-000 employed)	Non-fatal accidents at work (per 100-000 employed)	Work-related health problems
23	0.9 %	N/A	N/A	N/A

Coverage of Member States

Provision has been made for the transposition of this Directive in almost all MSs. Eurostat data, published in 2010⁶, shows that enterprises in the water transport sector (NACE Code H50) exist in almost all MSs, with the exception of Belgium, Luxembourg and Malta. It is unclear whether this result is due to insufficient data on the subject or a genuine zero return - although the entries for Belgium (confidential) and Luxembourg (low reliability) suggest that some data has been registered.

Belgium does have a ship registry, which implies that vessels are registered in Belgium. Similarly, vessels are also registered in Luxembourg⁷ and Malta. In fact,

⁶ Annual enterprise statistics by size class for special aggregates of activities (NACE Rev. 2) [sbs_sc_sca_r2] <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>.

⁷ <http://www.maritime.lu/luxembourg-merchant-fleet>.

Malta is acclaimed to have the largest ship register in EU⁸. It would seem, therefore, that this Directive is potentially relevant for all MSs.

It should, however, be noted that this includes freshwater and coastal transport and might not, therefore, provide an accurate representation of how relevant the particular provisions of this Directive are. In order to explore this further, the 27 NIRs were (re)examined. This revealed that four MSs (AT, CZ, HU, and SK) do not consider this Directive to be relevant for them. Slovakia described it as 'less than marginal'. It does, however, remain relevant for all other MSs.

Workforce relevance

Turning to the labour market, determining the proportion of the labour market covered by the provisions of this Directive is best achieved by establishing the number of persons employed within the maritime sector. The Directive is potentially relevant to all workers although, clearly, not all will work on qualifying vessels.

LFS data⁹ documents that, for 2012, a total of 215,678,600 people were employed within the EU-27 (15-74 years). Of these, 10,948,400 were employed within the transport and storage sector (including water transport). SBS data¹⁰ for 2011 (the most recent available) indicates that 10,594,400 workers are employed in transport of whom 217,000 are employed in 'water transport', although this includes shore-based workers within the sector and also those working in freshwater or small coastal vessels to whom the provisions of this Directive do not apply. Using this data to adjust the LFS data suggests that 216,881 workers are covered by the Directive.

According to other Eurostat statistics¹¹ a total of 170,200 workers are employed in the sea and coastal water transport (passenger and freight) sectors. However, this figure is, again, likely to include shore-based personnel working for appropriate employers.

In 2011, a Commission Task Force on maritime employment and competitiveness¹² reported that it was 'difficult to find accurate, complete and reliable figures on seafarers'. It found it necessary to recruit an external consultant to collate and estimate data on its behalf. As a result of these deliberations, it concluded that the estimated numbers of active seafarers in maritime EU MSs in 2010 plus Norway (as extracted from ISF/BIMCO Manpower up-date study 2010) were 143,967 officers and 110,152 ratings, for a total of 254,119 seafarers. Although (including Norway, SBS data indicate 25,134 workers) this appears to be the highest estimate, despite the fact that it appears to be restricted to those actually working

⁸ <http://www.flagport.com/>.

⁹ Employment by sex, age and economic activity (from 2008 onwards, NACE Rev. 2) - 1 000 [lfsa_egan2.

¹⁰ Annual enterprise statistics by size class for special aggregates of activities (NACE Rev. 2).

¹¹ http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/File:Key_figures_of_traditional_EU_maritime_industry_and_transport_enterprises,_2010_V2.png.

¹² <http://ec.europa.eu/transport/modes/maritime/seafarers/doc/2011-06-09-tfmec.pdf>.

on vessels. Deducting the SBS value for Norway leaves 191,747, or 0.9% of the EU workforce to whom this Directive is potentially relevant.

A further factor not formally considered here, but to be borne in mind, is that the provisions have implications for those travelling as passengers, not just crew, thus widening the potential relevance of this Directive.

4.1 EQR1: Current relevance

EQR1: To what extent do the Directives adequately address current occupational risk factors and protect the safety and health of workers?

The extent and severity of risks covered by the Directive

Work at sea is dangerous and, even today, seafarers are exposed to hazards rarely encountered in other fields of work. These risks include extreme weather, toxic emissions from cargo, failure of heavy mechanical equipment, infections from global travelling and psychosocial factors, such as fatigue and isolation. Seafarers face additional challenges such as medical emergencies managed by lay persons and/or remote/telephonic treatment due to geographical isolation, which can hamper immediate treatment [5].

The Medical treatment on board vessels Directive primarily focuses on the provision of medical facilities and resources on board vessels. As such, it does not have a direct bearing on the incidence of accidents or ill health on board vessels. It ensures that facilities are available in the event of an injury or illness, irrespective of whether or not the illnesses warranting treatment are work-related.

Accidents

The LFS 2007 database includes statistics for the past 12 months relating to reports on what is perceived as a work-related health problems¹³. However, as with non-fatal accidents, these are aggregated to the transport, storage and communication sector as a whole, with no way of determining the health problems associated with work on board sea-going vessels. Similarly, data from the EWCS survey (2007) is aggregated to the transport and storage sector (or transport, storage and communication) as a whole, with no way of determining the health problems associated with work on board sea-going vessels.

The European Statistics on Accidents at Work (ESAW) database¹⁴ records a total of 3,878 fatal accidents for 2012 across the EU-27, representing an incidence rate of 1.82 per 100,000 employed. This can be compared to the record for the water transport sector where there were 15 accidents during the same period, equating to an incidence rate of 5.81. Thus, the rate of fatal accidents in the water transport sector is more than three times that for workplaces as a whole (including that same sector). This data does, however, include any fatal accidents amongst shore-based workers employed in that sector.

¹³ Persons reporting one or more work-related health problems in the past 12 months, by sex, age and economic activity sector - % [hsw_pb6].

¹⁴ Fatal accidents at work by economic activity [hsw_n2_02].

Non-fatal accidents at work

The same ESAW database also documents non-fatal accidents at work¹⁵. In the same reporting period, a total of 3,156,456 non-fatal accidents were recorded for 2012 across the EU-27, representing an incidence rate of 1,480.74 per 100,000 employed. This can be compared to 2,394 (incidence rate: 926.86) for the water transport sector, around 60% of that for all workers. This presents an interesting ‘mismatch’ with a much higher rate of fatal accidents, but a lower rate of those, which were non-fatal. To put it another way, the water transport sector has fewer accidents – but they are more likely to result in a fatality.

As an alternative source of data, the LFS (2007) included information regarding accidents at work. Across the whole EU-27 sample, 3.0 % of those questioned reported an accident at work in the past 12 months¹⁶. Sector breakdowns aggregate the data to the whole transport, storage and communication sector, within which there were 3.5%, who reported an accident in the same period. As the preponderance of workers in this sector will not be employed in the water transport, these data are unlikely to provide a reliable estimate.

National data on accidents

Data from the Danish merchant fleet shows that the relative risk of accidents for seafaring was 1.7 compared with off-shore based industries. Moreover, the fatal accident rate for the Danish merchant fleet was 11 times higher compared to shore-based industries. Likewise, in the British merchant fleet, the relative risk of mortality due to accidents at work was 26.2 times higher than for all workers (36% were caused by work). Finally, in the Norwegian merchant fleet, the standard mortality rate was 3.7 compared with all men in and out of work [6].

Fatalities and serious medical events

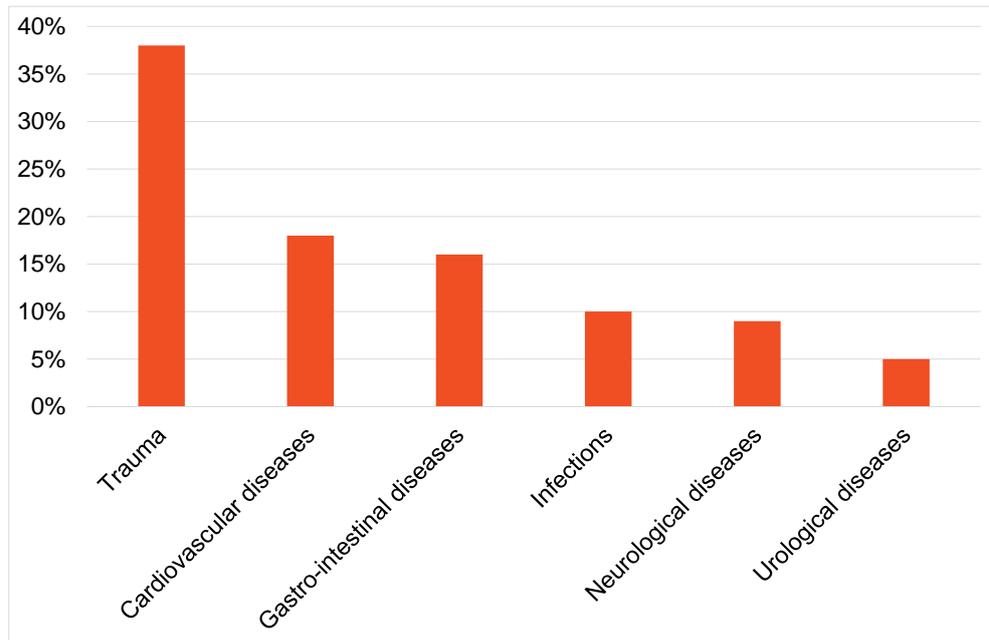
A study on the health of Danish seafarers and fishermen showed an excess risk of mortality, poor health and adverse health outcomes of non-occupational nature compared to other Danes [7]. Cardiovascular diseases (CVD) are today the leading cause of morbidity and mortality worldwide and in recent years, the prevalence of CVD ashore has increased. This increase has been related to demographic changes and unhealthy life-style related to cardiac risk factors, like smoking, high-fat diet and insufficient physical activity. These risk factors determine the cardiovascular risk both in the general population as well as among seafarers. Figure 4-1 shows the frequencies of serious medical emergencies on all types of vessels. The figure shows that, apart from accidents and work-related injuries, the main cause of serious medical emergencies is CVD [8].

A survey among Danish seafarers shows that unhealthy lifestyles are more common among male seafarers compared to the general population. For instance, 25% of the seafarers were obese (12% among the general population) and 44% were daily smokers (32% among the general population). Furthermore, seafarers more often reported a sedentary lifestyle and overeating [9].

¹⁵ Non-fatal accidents at work by economic activity and age [hsw_n2_03].

¹⁶ Persons reporting an accident at work in the past 12 months, by sex, age and economic activity sector - % [hsw_ac5].

Figure 4-1 Frequencies of reasons for serious medical emergencies in all types of vessels



Source: Oldenburg M. (2014). Risk of cardiovascular disease in seafarers. Int Marit Health.

Answer to EQR1

Seafaring is generally considered to be a high-risk occupation, and the incidence of fatal accidents is higher than in the water transport sector. The Medical treatment on board vessels Directive differs from most other Directives, because it does not seek to prevent or eliminate exposure to potentially dangerous working conditions. In contrast, it aims to ensure adequate healthcare in case of an accident and illness. Thus, the potential of the Directive is to mitigate the effects of serious accidents and disease. Such diseases are not only restricted to occupational diseases. For instance, CVDs are one of the most common reasons for serious medical emergencies (apart from accidents) at sea. Serious and potentially life-threatening accidents and diseases, like CVDs, require a fast diagnosis and initiation of proper treatment. This is clearly a challenge in a workplace characterized by geographical isolation.

4.2 EQR2: Future relevance

EQR2: Based on known trends (e.g. new and emerging risks and changes in the labour force and sectoral composition), how might the relevance of the Directives evolve in the future, and stay adapted to the workplaces of the future in light of the horizon of 2020? Does the need for EU level action persist?

National stakeholder's assessment

Few MSs offered any substantive views of this Directive in terms of future (or current) relevance. Of those who did comment, most drew attention to the fact that many of the provisions of the Directive mirrored those of the International Maritime Organisation (IMO) or the International Labour Organisation (ILO) where the MLC is of special importance. However, there were some differences (possibly arising through a faster process of change), which some MSs considered caused problems.

Opinions varied as to what the implications of this duplication were. Some stakeholders indicated that this rendered the Directive irrelevant – while others, even from the same MS, disagreed. One stakeholder (UK) pointed out that an important difference was the fact that the ‘requirements’ of the MLC were a voluntary code, whilst the same provisions in the Directive were binding. They therefore regarded the Directive as relevant (albeit a mechanism to align the provisions of the two documents would be beneficial). In contrast, others felt that the additional requirements of the Directive ‘disturbed a global level playing field’ – although this presumably depends on the extent to which other states, active within the sector, comply with the MLC Code.

Some concerns were expressed regarding the relevance of the Directive in certain sub-sectors. Particular reference was made to the emergence of fast supply ships that can sail outside the 200 miles zone and return to harbour in one day. For this type of ship, the requirements to carry medical supplies on board are excessive and lead to waste and unnecessary expense. In light of this, it was suggested that medical supplies requirements (especially medicines) and crew competency be reviewed in order to maximise the effect and relevance of the Directive. This should be carried out in the context of changes in technology, which enhances ship-to-shore communication.

EU-stakeholders assessment

The views of national stakeholders on the relevance of the Directive were largely echoed by EU stakeholders, particularly regarding the need to better align the provisions of the Directive with those of the MLC. Specific reference was made to a lack of a common definition of the vessels to which the provisions applied.

Information from National Implementation Reports (NIRs)

In some NIRs, reference was once again made to a need to review and align medicine lists and other provisions of the Directive and its scope to improve its ongoing relevance. Several references were made to the MLC (or ILO) in terms of inconsistencies between their agreement and the Directive. Again, rectifying these and establishing a more effective means of ensuring consistency in the future, would help to ensure its ongoing relevance. A small number of MSs have already updated national requirements to reflect these differences, aligning their legislation with the MLC rather than with the Directive.

Other sources

Scientific literature also points to important technological developments, in terms of telemedicine, which might contribute to the future relevance of the Directive. According to Amenta et al [4], telemedicine represents the most realistic option for offering at least a minimum medical care to seafarers, as most ships do not have a doctor on board. Telemedicine has the potential to bring benefits to patients in rural areas by facilitating timely access to high-quality healthcare service. Technological advances have opened new possibilities, for instance, by broadening the range of treatment options from radio counselling to e-mail correspondence and video conferences, which arguably could increase the relevance of the Directive (this topic will also be analysed in the chapter on the implementation and on the effectiveness).

Moreover, Oldenburg also reports that a considerable change in the working and living conditions of seafarers is foreseen, characterised by a lower average number of crew members and, as a consequence of modern ship techniques, a higher level

of responsibility for individual seafarers. Finally, Oldenburg also reports that the tendency for a more frequent turnover among crews might hamper the development of a confidential social system on board [8]. These trends might also affect the future relevance of the Directive, as certain requirements only apply to vessels of more than 500 gross registered tonnes, with a crew of 15 or more workers and engaged in voyages of more than three days. Furthermore, the Directive contains specific requirements for vessels with a crew of 100 or more workers, engaged in international voyage of more than three days, regarding the requirement to have a doctor responsible for medical care on board.

Answer to EQR2

Few EU and national stakeholders had strong opinions regarding the future relevance of the Medical treatment on board vessels Directive. The majority of the comments stated that many of the provisions of the Directive mirrored those of the IMO or the ILO where the MLC is of special importance. Specific reference was made to a lack of a common definition of the vessels to which the provisions applied. Finally, a decrease in the number of crew members might reduce the relevance of certain provisions (such as the requirements regarding sick bays), while technological changes might increase the relevance of telemedicine. However, taken together, it is not possible to ascertain if the relevance of the Directive will increase or decrease.

5 Assessment of effectiveness

The assessment of the Medical treatment on board vessels Directive takes its point of departure in the impact storyline presented in chapter 2. On the basis of data gathered from statistics, previous studies and interviews, we examine whether the intentions and associated hypotheses regarding the impacts of the Directive can be confirmed.

Evaluation questions on effectiveness

The evaluation encompasses seven questions on effectiveness. These questions form the structure of this chapter. Reflecting the methodology of the evaluation, not all questions are addressed at the level of the individual directives. In these cases, reference is made to the main report, which provides an analysis of these questions at the overall acquis level.

5.1 EQE1: Effect on occupational safety and health

EQE1: To what extent has the Directive influenced workers' safety and health, the activities of workers' representatives, and the behaviour of establishments?

This first evaluation question on effectiveness concerns a key element in relation to effectiveness – the impact of the Directive. In line with the intervention logic shown in chapter 2, we present the assessed impacts by firstly looking into workplace impacts – i.e. the direct changes/improvements that occur at the workplace as a result of implementing the KRs, and, secondly, by looking into the improvement in the safety and health situation arising from the workplace impacts.

5.1.1 Workplace impacts

The workplace impacts are concerned with the changes that take place as a result of implementing the Directive in individual workplaces. This is already described in section 3.3 on compliance in this report.

In summary, this section concluded that the evidence on the level of compliance with the Directive is weak and fragmented. Based on a very limited knowledge

base of the compliance in enterprises, the data suggests that compliance is medium to high, and that enterprises have implemented the Directive as required – but with lower compliance among SMEs and fishing vessels compared to the merchant fleet.

5.1.2 Health and safety impacts

In this section we take a closer look at the health and safety impacts of the Directive. The Directive does not aim to reduce or prevent the occurrence of ill health and accidents, but rather mitigate the negative effects, i.e. reduce mortality and fatality by ensuring adequate medical treatment. Thus, simply looking at the prevalence of accidents and disease over time does not provide a sound basis for estimating its health and safety impact. Records on fatal accidents and mortality on board might give a better indication.

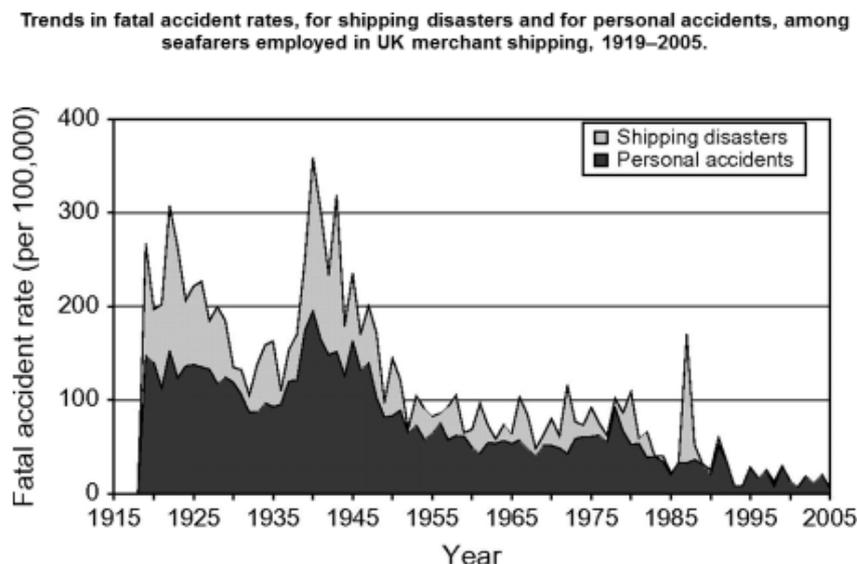
EMSA reports on the number of annual maritime casualties in the MSs. This data suggests an increase in occupational accidents (2011: 353 accidents, 2012: 651 accidents and 2013: 798 accidents). This increase, however, reflects improvements in the reporting of accidents over time [10]. Moreover, these numbers reflect the number of accidents and not the rates or incidences and, thus, do not take into account the number of workers employed in the sector. Time series data on the rate of fatalities at a European level is not available. However, research statistics are available from some of the MSs, including Denmark, Poland and the UK.

Trends in fatal accidents in the UK merchant fleet

Roberts analysed fatal work-related accidents in UK merchant shipping from 1919 to 2005. Figure 5-1 shows the trends for shipping disasters and personal accidents separately. The figure shows large reductions in the fatality rate over time. The largest reductions occurred from the late 1920s to the early 1930s, during the late 1940s and the 1950s and since 1980. The sharp decline during the past 25 years is largely because most UK cargo ships, which tend to carry higher risks of fatal accidents than for instance passenger ships, were registered with flags of convenience during the 1980s and 1990s. Roberts notes that these trends also mirror developments in fatal accident rates among the general working population in the UK [11].

In a similar study encompassing data from 1976-2002, Roberts and Marlow found that out of 835 traumatic work related deaths, 564 were caused by accidents, 55 by suicide, 17 by homicide and 14 by drug or alcohol poisoning [12].

Figure 5-1 Trends in fatal accident rates among seafarers employed in UK merchant shipping (1919-2005)



Roberts S E Occup Med (Lond) 2007;58:129-137

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Occupational Medicine

Source: Robert S. (2008). Fatal work-related accidents in UK merchant shipping from 1919 to 2005. Occupational Medicine, 58; 129-137.

Trends in fatal accidents in the British fishing industry

The trends in the UK fishing industry, however, seems to be less promising. Whereas accidents among seafarers on merchant ships in the UK have declined, no reduction in the mortality rate in British commercial fishing can be observed for the period 1976 to 1995. Actually, the risk increased through the 1980s to 1991-1995 [13].

Trends in mortality due to gastrointestinal diseases in the British merchant fleet

As shown previously in the chapter on relevance, gastrointestinal disease was the second most common disease resulting in death, after CVDs, among seafarers. Roberts [14] reported a total number of deaths due to gastrointestinal disease of 864 and 72 from alcoholism in 1939-2002 among seafarers in the British merchant fleet. The main causes of death from digestive diseases were peptic ulcer (207 deaths), peritonitis (152), cirrhosis of the liver (103) and appendicitis (64). Diseases of the stomach and duodenum accounted for 252 deaths, diseases of the liver for 174 deaths and other digestive diseases for 438 deaths.

In the period 1939-2002, the overall mortality rate for digestive diseases fell from 18.4 per 100,000 seafarer years in 1929-1949 to 10.9 in 1950-59. It then levelled off to 9.3 in 1970-79, before falling sharply to 5.2 in 1980-89 and 0.3 in 1990-2002. Mortality from alcoholism and alcohol-related diseases increased up till 1970s, but fell thereafter.

According to Roberts, the trends in certain gastrointestinal diseases, such as peptic ulcers, are consistent with declining mortality rates in the general British

population. However, reductions in mortality among seafarers from alcohol-related gastrointestinal diseases, such as liver cirrhosis and diseases of the pancreas, contrast increases in the general British population. The reduction among seafarers is partly because of declining alcohol consumption due to a change in the alcohol culture, but also because of an increase of multinational crews (alcohol use tends to be lower among crews from Asian countries). Finally, according to Roberts, the decrease in mortality is also explained by large reductions in the time that seafarers spend at sea (fewer seafarers spend long periods of time at sea) reducing the likelihood of suffering an episode at sea.

Cardiovascular diseases CVD) accounts for the majority of natural causes of death

In the 1980s and the 1990s, deaths due to CVD accounted for 55-70% of all natural causes of death among seamen on British and Danish merchant ships. As the number of injuries decreases, CVD tends to become the most common cause of death on board. Whereas the mortality of CVDs does not differ from that of the general population, an important difference is that the treatment and medical care on board is not always applied by a medical professional. Moreover, the treatment of CVD is hampered by the delayed resuscitation actions, the limitations of treatment on board as well as problems of evacuation ashore. Thus, a study among Polish seafarers showed that the survival rate significantly differed from Polish workers ashore [15].

Trends in mortality from cardiovascular diseases in the British merchant shipping industry

Roberts and Jaremin [16] investigated the CVD mortality among British seafarers in the merchant shipping industry. They found an increase in work-related CVD mortality from 1919 to 1962, but a subsequent reduction to 2005. The increase from 1919 to 1962 is similar to an increase in the general population in the UK and other European and western countries. Likewise, the subsequent decrease also mirrors that of the general population. These trends have been linked to changes in risk factors, such as improvements in diagnostics and pre- and post-hospital treatment. These improvements are also likely to apply to seafarers, however, logistic factors are likely to hinder many of these improvements in treatment (for instance early initiating of treatment after a cardiac event). However, the Directive contains a requirement of MSs to ensure that one or more centres are designated to provide workers with free medical advice by radio by doctors, where some have been trained in the special conditions prevailing on board a vessel. Over the last decade, technological advances have opened new possibilities, for instance by broadening the scope from radio counselling to sending e-mails and video conferences. These development might have had a positive impact on the mortality rates on board vessels, however, no data on the effectiveness is available.

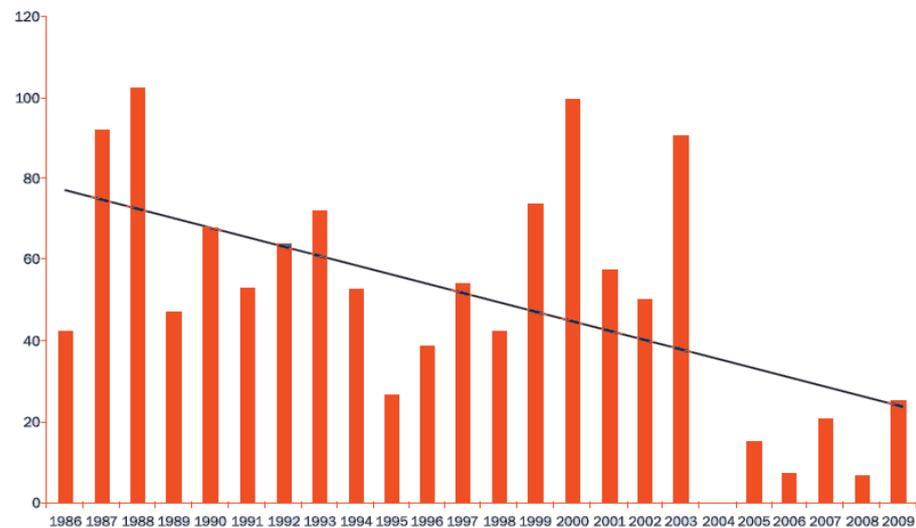
Trends in death rates on Danish merchant ships

One study of deaths on board Danish merchant ships (1986-2009) demonstrated that the overall death rate declined substantially during the 24-year observation period. This reduction accounted for almost 54%, with the most pronounced reduction occurring during the period 2002-2009. This decline was due, in particular, to a reduction of occupational and non-occupational fatal accidents as well as a decline in fatal diseases on board.

Figure 5-2 shows the fatal incidence rate from 1986-2009. The largest reduction in deaths (70%) was observed for recognized fatal diseases and fatal accidents outside work. Fatalities due to occupational accidents, ship wrecks, disease-related deaths ashore and suicides were all reduced by 50% of the initial rate [17]. In the

period 1986-2001, fatal accidents increased more than five-fold among seafarers compared to male workers ashore (when including shipwrecks, the relative risk increases to almost ten-fold). From 2002-2009, the excess risk was reduced to just over three and six times for the two categories. Thus despite remarkable improvements since 1986, seafarers in 2002-2009 are more than six times more likely to die from occupational accidents (including shipwrecks) compared to workers ashore.

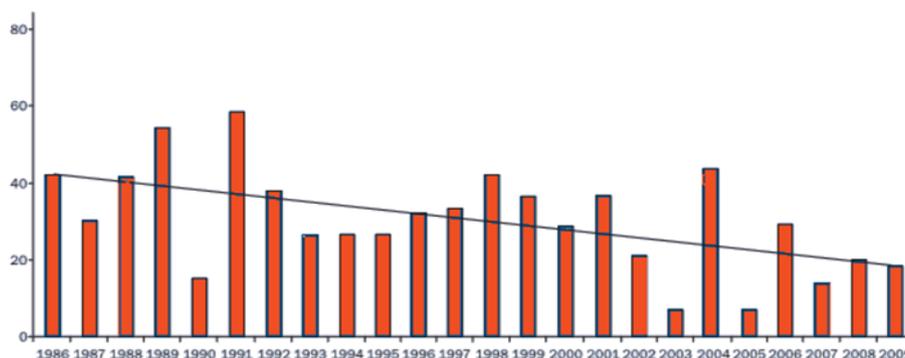
Figure 5-2 Rates of fatal accidents per 100,000 person-years on board Danish merchant ships (1986-2009)



Source: Borch et al (2012). Surveillance of maritime deaths on board Danish merchant ships, 1986-2009.

As shown in Figure 5-3 on deaths related to diseases, the risk was also reduced from 1986-2009, but the reduction was less evident for CVDs.

Figure 5-3 Crude rates of fatal diseases on board per 100,000 person-years



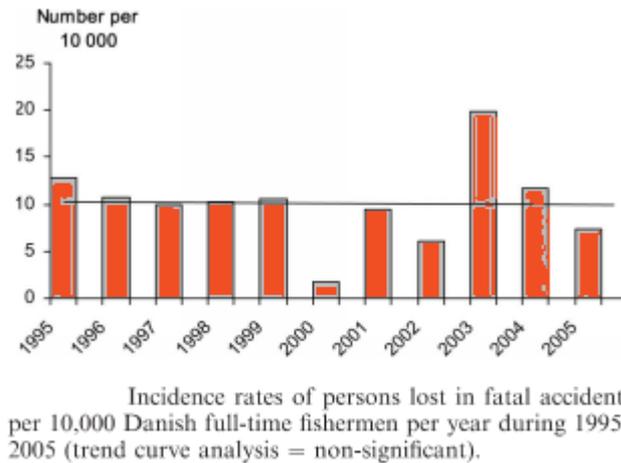
Source: Borch et al (2012). Surveillance of maritime deaths on board Danish merchant ships, 1986-2009.

Borch et al assess that these trends are related to improved safety on board, including improved medical care on board [5]. However, the Danish maritime sector also changed considerably over the past decades. For instance, while the merchant vessels dropped from 948 in 1970/71 to 483 in 2013, the gross tonnage more than doubled from 3,194,000 to 11,083,000. Simultaneously, the crew size fell from 16,626 to 9,611. Renewal during the last three decades has also resulted in a significantly younger fleet compared to the global fleet (11 vs. 21 years in 2009) [7]. Finally, the composition of the crew has also undergone significant changes in terms of nationality. In 1980, the share of seafarers with a foreign nationality was about 10%, whereas this percentage was 50% in 2009 [17]. A previous study showed that the accident rates differ by nationality [18]. Thus, these trends are also like to have had an impact on the mortality trends in the Danish merchant fleet.

Trends in fatal accidents on Danish fishing vessels

Trends, however, have been less positive regarding Danish fishing vessels. As shown in Figure 5-4, during 1989-2005 a total of 114 fatal accidents were registered, primarily occurring on trawlers and gillnetters (94%). Vessel disasters caused 53.5% of all fatalities. During 1995-2005, the incidence rate of person fatalities was on average 10 per 10,000 Danish full-time fishermen with the trend curve almost status quo [19].

Figure 5-4 Incidence rates of fatal accidents per 10,000 full-time fishermen per year during 1995-2005



Source: Laursen et al (2008). Fatal occupational accidents in Danish fishing vessels 1989-2005. International Journal of Injury Control and Safety Promotion.

Trends in mortality rates among Polish small boat fishermen

In Poland, mortality decreased during the period 1960-1999 in the small-scale fishing industry, except for small boat fisherman. Thus, a reduction was only seen for cutter-fishermen. A total of 177 deaths at sea were recorded during the period, with an overall mortality rate of 89 deaths per 100,000 employees per year. The main aspects relevant to the mechanism of death were shock in cold water (about 50%), lack of thermos protective clothes (about 25%) and delayed rescue actions. Furthermore, alcohol was implicated in 45% of deaths where an autopsy was carried out [20].

Answer to EQE1

The prevalence of fatal accidents has fallen dramatically among seafarers in the merchant fleet in several MSs. Several researchers assess that part of this drop is explained by improved OSH initiatives including better medical treatment on board. However, trends in the fishing industry seem to be less positive. The rate of fatal accidents at European level is not available and rates may differ from MS to MS.

5.2 EQE2: Derogations and transitional periods

EQE2: What are the effects on the protection of workers' safety and health of the various derogations and transitional periods foreseen in several of the Directives concerned?

Answer to EQE2

As mentioned in section 3.2, no derogations or transitional periods have been applied or have been used under national law, under the Medical treatment on board vessels Directive. Hence, there is nothing to report under this evaluation question.

5.3 EQE3: Effect of Common Processes and Mechanisms

EQE3: How and to what extent do the different Common Processes and Mechanisms that were mapped contribute to the effectiveness of the Directives?

Answer to EQE3

There is very limited data on the importance of the different CPMs in relation to the effectiveness of the directives. Due to the general lack of statistical data on workplace and safety and health impacts, it is also not possible to establish any quantifiable evidence concerning the contribution of the CPMs.

Due to the limited number of interviewees that specifically focused on the Medical treatment on board vessels Directive, it is not possible to point to specific CPMs as being most effective. Likewise, a previous evaluation report stresses that measuring the impacts in a quantifiable manner is extremely difficult - especially considering that some MSs already had national provisions laying down stricter requirements.

5.4 EQE4: Effect of enforcement

EQE4: To what extent do sanctions and other related enforcement activities contribute to the effectiveness of the Directives?

Answer to EQE4

Interview data from the MSs and European stakeholders is too scarce to be taken into consideration. Reference is made to the main report, which provides a general analysis of the effect of enforcement on the effectiveness of the directives.

5.5 EQE5: Benefits and costs

EQE5: What benefits and costs arise for society and employers as a result of fulfilling the requirements of the Directives?

This question is addressed in the main report in a cross-directive perspective.

5.6 EQE6: Broader impacts

EQE6: To what extent do the Directives generate broader impacts (including side effects) in society and the economy?

This question is addressed in the main report in a cross-directive perspective.

5.7 EQE7: Objective achievement

EQE7: To what extent are the Directives achieving their aims and, if they are not, what cause could play a role? What factors have particularly contributed to the achievement of the objectives?

The Medical treatment on board vessels Directive aims to protect the health and safety of workers on board vessels by ensuring that vessels have appropriate medical supplies and that seafarers have the adequate training and information as regards the use of medical supplies. No specific (or quantifiable objectives) have been outlined in the Directive, which makes it difficult to assess whether or not the Directive has achieved its objective. Moreover, because EU stakeholders and national stakeholders only seldom commented specifically on the Directive, these sources do not provide useful indications in terms of the Directive objectives. However, fulfilment of the objective will clearly depend on how successfully the Directive has been implemented and whether it has proven to improve the health and safety of workers. Results from the analysis of the implementation and the effectiveness have been presented earlier.

Answer to EQE7

The Directive contains no quantifiable objective. Fulfilment of the objective, however, will clearly depend on how successfully the Directive has been implemented and whether it has proven to effectively improve the health and safety of workers. Results from the analysis of the implementation and the effectiveness have been presented earlier.

6 Assessment of coherence

In this chapter, we assess the internal and external coherence of the Medical treatment on board vessels Directive, i.e. how the Directive complements or counteracts other OSH Directives (internal) and other EU policies or international instruments (external). We place specific emphasis on identifying legislative overlaps, which may result in double regulation. Please notice that no issue of double regulation has been identified unless specifically stated.

6.1 EQC1: Coherence and complementarity between Directive 92/29/EEC on Medical treatment on board vessels and the other OSH Directives (internal coherence)

EQC1: What, if any, inconsistencies, overlaps, or synergies can be identified across and between the Directives (for example, any positive interactions improving health and safety outcomes, or negative impact on the burdens of regulation)?

Scope of application	The Medical treatment on board vessels Directive lays down minimum requirements for improved medical treatment on board vessels (i.e. any vessel flying the flag of a MS or registered under the plenary jurisdiction of a MS, seagoing or estuary-fishing, publicly or privately owned, excluding inland navigation vessels, warships, pleasure boats used for non-commercial purposes and not manned by professional crews and tugs operating in harbour areas). The Directive applies to workers, excluding port pilots and shore personnel carrying out work on board a vessel at the quayside.
Risk assessment	The Directive does not contain any specific provision requiring carrying out a risk assessment. A specific risk assessment is not needed as the Directive sets general requirements on the provision of adequate and medical equipment on board vessels.

Risk management measures derived from the risk assessment	Not applicable to the Directive..
Preventive and protective service	Not applicable to the Directive
Information to workers	In relation to information to be provided to workers, the Medical treatment on board vessels Directive requires MSs to ensure that medical supplies are accompanied by one or more guides to their use, including instructions for use of at least the antidotes required. These requirements are linked to the specific scope of the Directive.
Training of workers	Article 5(2) of the Medical treatment on board vessels Directive requires that people receiving professional maritime training and intending to work on board ships are given basic training in the medical and emergency measures to be taken in the event of an accident or serious medical emergency. Furthermore, the captain and any delegated worker must receive special training updated periodically (at least every five years) taking into account specific risks for each category of vessels. As above, these requirements are linked to the specific scope of the Directive.
Health surveillance	The Directive does not include a provision on health surveillance. This requirement is not applicable under this Directive.
Health records	Pursuant to Article 6(2) of the Medical treatment on board vessels Directive, radio consultation centres may keep medical records, with the agreement of the workers concerned, in order to optimise the advice given. Records shall be subject to the confidentiality clause.
Consultation of workers	The Medical treatment on board vessels Directive, like a majority of individual directives (15), does not contain any specific worker consultation requirements.
Adoption of limit values	Not applicable to the Directive.
Workers at particular sensitive risk	Not applicable to the Directive.
Other aspects	<p><u>Reporting obligations:</u></p> <p>The Medical treatment on board vessels Directive requires MSs to ensure that the content of the medicines and medical equipment included in the medical supplies are detailed on a checklist. In addition, a checklist is also required for detailing the content of medical supplies as regards antidotes.</p> <p><u>Inspection and enforcement measures:</u></p> <p>The Medical treatment on board vessels Directive requires that competent authorities carry out annual inspections to check that medical supplies comply with the minimum requirements, that the checklist confirms compliance of medical</p>

supplies with minimum requirements, and that expiry dates have been respected. Medical supplies stored on life-rafts need to be checked at least annually.

EU stakeholders' views No coherence issues have been identified.

Information from the NIRs None identified.

Answer to EQC1 No issues of internal coherence were identified between the Medical treatment on board vessels Directive and the other OSH Directives. With regard to external coherence, few inconsistencies and overlaps were found between, on the one hand, the Medical treatment on board vessels Directive and, on the other hand, Directive 2009/13/EC implementing the Social Partners Agreement on the MLC, Directive 2008/106/EC on the Minimum level of training of seafarers and the Social Partner Agreement concerning the implementation of the ILO Work in Fishing Convention of 2007.

6.2 EQC2: Coherence between Directive 92/29/EEC on Medical treatment on board vessels and other EU measures and policies/international instruments (external coherence)

EQC2: How is the interrelation of the Directives with other measures and/or policies at European level also covering aspects related to health and safety at work, such as EU legislation in other policy areas (e.g. legislation: REACH, Cosmetics Directive, Machinery Directive, policy: Road Transport Safety, Public Health, Environment Protection), European Social Partners Agreements or ILO Conventions?

The assessment of external coherence is complicated by the fact that various international agreements are relevant and set very similar requirements. However, there is a certain level of confusion as they all have a different status:

- › One convention, the IMO STCW, is implemented directly through a specific directive (Directive 2008/106/EC);
- › Another convention, the ILO MLC, is part of the EU legal order through the implementation of a social partner agreement through a directive (Directive 2009/13/EC);
- › The third relevant convention, the ILO Work for Fishing Convention, has been subject to a social partner agreement, but this agreement has not been implemented through a directive.

Finally, the Council has adopted a decision authorising MSs to ratify the two ILO conventions.

Other EU legal acts Directive 2009/13/EC on the Social Partners Agreement on the MLC and Directive 2008/106/EC on the Minimum level of training of seafarers.

In May 2008, the European Community Shipowners' Associations (ECSA) and the European Transport Workers' Federation (ETF) concluded an agreement on the ILO MLC. This Agreement was later implemented by Directive 2009/13/EU, which entered into force at the same time as the MLC on 20 August 2013. The social agreement includes all mandatory clauses of the MLC (or Part A) and leaves out non-mandatory clauses (or Part B). The MLC and therefore Directive 2009/13/EC apply to all commercial seagoing ships excluding fishing vessels. The Agreement contains Articles from the MLC related to medical treatment on board vessels.

Scope of Directive 2009/13/EC Directive 2009/13/EC has a more limited scope than the Medical treatment on board vessels Directive. It only applies to commercial seagoing ships excluding fishing vessels, warships, inland navigation, sheltered waters or waters where port regulation applies, whereas the Medical treatment on board vessels Directive applies to all vessels including harbour vessels, but excluding inland navigation vessels, warships, pleasure boats, tugs operating in harbour areas. Similarly to the Medical treatment on board vessels Directive, it applies to all seafarers, defined as any person employed on board of seagoing ship, which therefore excludes staff on shore.

Directive 2009/13/EC provides that the Agreement shall not affect any law, custom or agreement, which provides more favourable conditions for the seafarers concerned. It adds that the terms of this Agreement are, among others, without prejudice to the provisions under the Framework Directive and to the Medical treatment on board vessels Directive. This means that commercial seagoing ships falling under Directive 2009/13/EC will also have to comply with Medical treatment on board vessels Directive.

Duty to carry on board medical supply and equipment Directive 2009/13/EC requires that all ships shall carry a medicine chest, medical equipment and a medical guide. Such requirements are already covered under the Medical treatment on board vessels Directive, which requires that any vessel must carry appropriate medical supply including a medical chest¹⁷ as detailed in its annex. This medical supply must be accompanied by guides and instruction to their use. This overlap does not lead to double regulation in practice.

Duty to carry medical staff on board The Medical treatment on board vessels Directive requires that vessels with a crew of 100 or more workers and engaged in international voyage of more than three days must have a doctor responsible for medical care on board. A similar requirement applies in Directive 2009/13/EC. This overlap does not lead to double regulation in practice.

Access to medical consultation by radio The Medical treatment on board vessels Directive requires that workers on board vessels must be granted access to medical consultation by radio to facilitate assistance in case of injuries or emergency. A similar requirement applies under

¹⁷ For each of its life-rafts and life-boats, every vessel flying its flag or registered under its plenary jurisdiction carries a watertight medicine chest. [...]

Directive 2009/13/EC, except that it mentions that this medical consultation can be done either by radio or satellite.

Training

The Medical treatment on board vessels Directive requires that people receiving professional maritime training and intending to work on board ship are given basic training in the medical and emergency measures to be taken in the event of an accident or serious medical emergency. Furthermore, the captain and any delegated worker must receive special training updated periodically (at least every five years), taking into account specific risks for each category of vessels. According to annex V to the Medical treatment on board vessels Directive, this special training must include, among others, basic understanding of physiology, symptomatology and therapeutics, the ability to perform basic types of treatment and supervise emergency. This annex also mentions that this training should take account of the programmes of instruction detailed in relevant recent international documents.

Similarly, Directive 2009/13/EC requires that ships, which do not carry a medical doctor, have at least one seafarer trained to provide medical care and/or first aid. It specifies that this training must meet the requirements of the STCW.

Directive 2008/106/EC implements the STCW into EU law. The 1995 Convention has been ratified by four MSs (Denmark, Latvia, Lithuania and Spain). It is also subject to a proposal of a Council Decision to authorise its ratification¹⁸. The Directive applies to all commercial seagoing ships. It excludes fishing vessels, warships, leisure boats, wooden ships and, hence, has a more limited scope than the Medical treatment on board vessels Directive.

Directive 2008/106/EC provides requirements for the minimum safety training of seafarers and specific training for seafarers designated to provide medical first aid on board ships and seafarers designated to take charge of medical care on board ship. As mentioned above, annex V to the Medical treatment on board vessels Directive requires that the captain and delegated workers' training take account of the programmes of instruction detailed in relevant recent international documents. In other words, this training in case of commercial seagoing ships should take into account the STCW.

The description of the medical training provisions under these three Directives shows that the Medical treatment on board vessels Directive and Directive 2009/13/EC set equivalent training requirements for commercial seagoing ships. This potential overlap does not lead to double regulation in practice, but may be confusing as similar requirements are set by different texts.

¹⁸ Proposal for a Council Decision authorising Member States to sign and/or ratify, in the interest of the European Union, the International Convention on Standards of Training, Certification and Watch-keeping for Fishing Vessel Personnel, 1995, of the International Maritime Organisation /* COM/2013/0595 final - 2013/0285 (NLE) */.

Relevant European Social Partners Agreements	<p>Social Partner Agreement concerning the implementation of the ILO Work in Fishing Convention of 2007.</p> <p>Social partners in the European Union’s sea-fisheries sector adopted in 2012 a Social Partner Agreement concerning the implementation of the ILO Work in Fishing Convention of 2007. This Agreement has not yet been enforced into EU law. Social partners have, however, requested the Commission to speed up the process of transposing the Agreement into an appropriate EU legislative instrument¹⁹. The Agreement reflects the provisions of the Work in Fishing Convention related to medical treatment on board vessels.</p>
Scope	<p>The Agreement applies to the fishermen working on all fishing vessels engaged in commercial fishing, whether they are under a contract of employment or in an employment relationship, or present on the same vessel as fishermen under contracts. There is no general restriction of length, but some of the clauses are restricted to vessels of 24 metres in the Agreement. Any MS can extend, in whole or in part, these provisions to fishermen working on vessels of less than 24 metres.</p>
Duty to carry on board medical supply and equipment	<p>To avoid overlap with the Medical treatment on board vessels Directive, the Social Partner Agreement does not include provisions on medical supply. However, it includes a requirement contained in the ILO Convention to carry a medical guide for vessels of 24 metres and over and extends it to all fishing vessels. This is a potential overlap with the obligation under the Medical treatment on board vessels Directive to set guides and instructions for the use of medical supplies. This does not lead to double regulation in practice.</p>
Medical consultations by radio	<p>The Medical treatment on board vessels Directive requires that workers on board vessels must be granted access to medical consultation by radio to facilitate assistance in case of injuries or emergency. The Social Partner Agreement adds that the medical consultations referred to in Article 6, paragraph 1, of the Medical treatment on board vessels Directive must also be available through satellite communication and that fishing vessels flying their flag or registered under their plenary jurisdiction shall, for the purpose of obtaining such consultations, be equipped for radio or satellite communication.</p>
Medical supply at the expense of the employer	<p>The principle that medical supply is at the expense of the employer is included both in the Social Partner Agreement and under the Medical treatment on board vessels Directive. This overlap does not lead to double regulation in practice</p>
Other international instruments	<p>› The ILO MLC, 2006</p> <p>ILO adopted in 2006 the MLC, which establishes minimum working and living standards for all seafarers working on ships flying the flag of ratifying countries. The MLC consolidates in a single document a number of previous ILO labour</p>

¹⁹ Europêche letter to the Commission:
<http://www.europeche.org/sites/default/files/attachedfiles/EP55%20Letter%20Juncker%20-%20Social%20responsibilities%20in%20sea-fisheries.%20the%20role%20of%20the%20European%20Union.pdf>.

conventions and recommendations. Title IV in particular lays down provisions on health protection, medical care, welfare and social security protection. The MLC entered into force on 20 August 2013. The Convention is subject to a Council Decision authorising its ratification in the interests of the Union²⁰ and has been ratified by 21 EU MSs. The assessment and conclusions are the same as for Directive 2009/13/EC.

› The ILO Work in Fishing Convention, 2007

ILO adopted the Work in Fishing Convention in 2007, which brings together and updates previous ILO conventions and recommendations covering fishing vessels. It is the equivalent of the MLC for fishing vessels. The Convention has not entered into force having not reached a sufficient number of ratifications. However, European social partners have reflected it into an Agreement in 2012, which has not yet been enforced into EU law. Social partners have, however, requested the Commission to speed up the process of implementation of the Agreement into an appropriate EU legislative instrument²¹. None of the EU MSs have ratified the Convention despite the fact that it is subject to a Council Decision authorising its ratification in the interests of the Union²².

The provisions on medical treatment between this ILO Convention and the Medical treatment on board vessels Directive are equivalent to the exception according to which the ILO Convention requires that the medical equipment and supplies on board must be accompanied by a guide and information in a language and format understood by the fishermen.

²⁰: Council Decision of 7 June 2007 authorising MSs to ratify, in the interests of the European Community, the MLC, 2006, of the ILO (2007/431/EC).

²¹ Europêche letter to the Commission:
<http://www.europeche.org/sites/default/files/attachedfiles/EP55%20Letter%20Juncker%20-%20Social%20responsibilities%20in%20sea-fisheries.%20the%20role%20of%20the%20European%20Union.pdf>.

²² Council Decision of 7 June 2010 authorising MSs to ratify, in the interests of the European Union, the Work in Fishing Convention, 2007, of the ILO (Convention No 188) (2010/321/EU),

National stakeholders and experts' views

Stakeholders have suggested that the Medical treatment on board vessels Directive deviates from the WHO Guidelines²³, which causes confusion. They consider it would be a major improvement if the same uniform rules on medical supplies were prescribed worldwide. They also suggested that the Medical treatment on board vessels Directive should be aligned with the standards of the ILO's 2006 MLC and the 2007 Convention on Work in Fishing.

Information from the NIRs

One MS stressed that the Medical treatment on board vessels Directive was causing confusion at the implementation stage, because the ILO and WHO have also developed guidelines in connection with medical supplies. The European Directive deviated from the WHO Guidelines. It would be a major improvement if the same uniform rules on medical supplies were prescribed worldwide. Another MS suggested that the Medical treatment on board vessels Directive should be aligned with the standards of the ILO's 2006 MLC and the 2007 Convention on Work in Fishing.

The Medical treatment on board vessels Directive lists the specific treatments, which must be carried in each category of medical stores. When Directive 2011/62/EU on the prevention of entry of falsified medicines into the supply chain comes into force, a wholesale dealer's licence will be required as: "persons procuring, holding, storing, supplying or exporting medicinal products are only entitled to pursue activities if they meet the requirements for obtaining a wholesale distribution authorisation in accordance with Directive 2001/83/EC" as amended by Directive 2011/62/EC. The current supply chain does not require that those supplying Category C stores required under the Medical treatment on board vessels Directive hold a wholesale dealer's licence. Some of the treatments required for Category C stores can only be supplied in the form of medicines, which fall within the scope of Directive 2011/62/EU, which requires anyone supplying these medicines to hold a wholesale dealer's licence. A Category C store is required for vessels operating close to shore – many of which are operated by SMEs – and is also required to be packed inside life-rafts. This limits the number of outlets able to supply Category C stores. Most of the safety equipment required for such vessels can be supplied by local chandlers and Life-Saving Appliances (LSA) service stations. If SMEs have to source their medical stores separately from other safety equipment, this places an additional administrative and financial burden on

²³ The purpose of the **International medical guide for ships WHO 2007 (third edition)** is to support seafarers to diagnose, treat and prevent health problems at sea with a focus on the first 48 hours after injury. This guide should be kept in the ship's medicine chest. Chapter 33 of the guide sets recommendations on how to use the medical supplies and the medicines that it must contain. Unlike the Directive, it contains recommendations on the use of medicines (pregnant women, drug allergy, and secondary effects). The main difference with the Directive is that it provides information on the use of specific medicines using generic names, whereas the Directive refers to the broader categories of medicines (e.g. seasickness remedies, anti-epileptics) that must be included in the medical supplies. This guide could be used to implement the provision of the Medical treatment on board vessels Directive requiring medical supplies to be accompanied by one or more guides to their use.

them. A high proportion of service stations for life-rafts are also SMEs and it is not possible for them to meet the standards required to obtain a licence for the supply of medicines.

Answer to EQC2

These inconsistencies and gaps suggest the potential need to remove the provisions of Directive 2009/13/EC and Directive 2008/106/EC on Medical treatment and to align the provisions of the Medical treatment on board vessels Directive with the relevant provisions on medical treatment of the ILO MLC, 2006, the ILO Work in Fishing Convention, 2007 and the STCW.

7 Conclusions and recommendations

In this chapter, we present the main findings, conclusions and recommendations of the analyses on the implementation, relevance, effectiveness and coherence of the Directive. Subsequently, we synthesise the results in a discussion on key findings, which feed into the overall conclusion and recommendations.

7.1 Implementation

The majority of MSs have transposed the Directive, and about half of the MSs have implemented more detailed/stringent requirements. However, many of the MSs already had provisions in place before transposing the Directive.

The evidence available on the level of compliance at enterprise level is weak and fragmented, which hampers firm conclusion about compliance at enterprise level. However, the available data from a few MSs indicates that compliance is generally at a medium level. Moreover, a previous report on the implementation assessed that the compliance is high, and that enterprises have implemented the Directive as required – but with lower compliance among SMEs and fishing vessels compared to the merchant fleet.

7.2 Relevance

There is no reliable data on the number of workers covered by the Directive. However, compared to other directives, the Medical treatment on board vessels Directive covers a somewhat smaller group of European workers. Moreover, the Directive does not aim to prevent the occurrence of accidents. However, the consequences of not getting fast treatment after, for instance, a heart attack will have severe and even fatal consequences for the worker. Moreover, one should bear in mind that the provisions could have implications for those travelling as passengers, not just crew, thus widening the potential relevance of this Directive. It is difficult to assess its future relevance, as available data does not suggest an increase or decrease in its relevance. Moreover, several factors might enhance or reduce its relevance. For instance, the reduction in the number of crew members on board vessels might decrease its relevance (as several of the provisions in the

Directive depend on the crew size), while new technological opportunities within telemedicine could increase its relevance.

7.3 Effectiveness

The prevalence of fatal accidents has fallen among seafarers in the merchant fleet in several MSs. However, trends in the fishing industry seems to be less positive. It should be noted that these trends are based on a few MSs, and that data at European level is not available. Thus, accident rates might differ from MS to MS.

As the Directive only covers provisions related to managing accidents and ill health (and not prevention), it is unlikely that the Directive, in itself, has had a major impact on the morbidity and the incidence of accidents. However, survival rates after accidents and serious illness might have improved, but as outlined in the previous discussion section, these trends might also be related to other factors and international conventions and agreements.

7.4 Coherence

In the evaluation, we have not identified any issues of internal coherence between the Medical treatment on board vessels Directive and the other OSH Directives. With regard to external coherence, a few inconsistencies and overlaps were found between Directive 92/29/EEC and Directive 2009/13/EC implementing the Social Partners Agreement on the MLC, Directive 2008/106/EC on Minimum level of training of seafarers and the Social Partner Agreement concerning the implementation of the ILO Work in Fishing Convention of 2007.

7.5 Overall discussion

The Medical treatment on board vessels Directive does not aim to prevent accidents from occurring, but rather to mitigate the consequences of serious accidents and health problems while at sea. One of the main challenges outlined in the Directive is geographical isolation, which might reduce the quality of care given to workers on board vessels. Thus, with this in mind, it is unlikely that the Directive has had any effect on the number of accidents at sea. However, the Directive might have contributed to improved survival and recovery rates. Therefore, in this evaluation we have looked at the trends in fatal accidents and fatalities on board vessels.

While data was only available for a few MSs, the trends show a clear decline (except for fishing vessels) in fatal accidents. Moreover, the analysis indicates that the Directive has been transposed in all MSs and that the compliance at enterprise level has been high. Thus, this could indicate that the Directive has been effective and has achieved its goal in ensuring adequate treatment of workers on board vessels. However, the picture is a bit more complex. First of all, fatal accident rates are affected by a range of other factors, like improvements in health care. Moreover, the decline in number of fatal accidents occurred long before the Directive was transposed into national legislation, which strongly suggests that it is

not the Directive that has influenced these rates. In addition, many MSs already had OSH provisions in place and other conventions and charters also contain related provisions. Thus, the Directive is not the only factor contributing to the safety of seafaring. Firm conclusions about causal relationships are therefore not possible.

However, considering that the Directive seems to have been well implemented and in light of improved options and possibilities for telemedicine, it is likely that the Directive has had some effect. Telemedicine represents the most realistic option for medical care on board vessels, and technical advances have broadened the scope of telemedicine from radio consultations to e-mails and video conferences. Apart from accidents, CVDs is one of the main causes for mortality on board vessels. Due to its severity and high prevalence, researchers point to CVD as a good example of a disease, which could be treated with better result on board vessels using telemedicine. However, telemedicine should not be limited to the treatment of CVD, as it can be used to treat a large range of acute and non-acute diseases and accidents.

The first clinical signs of CVD are often thoracic symptoms. To improve the reliability of the diagnosis in patients with these symptoms, Oldenburg therefore suggests using a tele-medical transmitted electrocardiogram (ECG). The ECG can provide important information, especially in the case of potentially arrhythmic heart disease²⁴. In Germany, as the first country to implement this, an ECG must be available on merchant ships. Moreover, to reduce the risk of CVD and improve the survival after cardiac events at sea, Oldenburg recommends that the medical refresher courses focus more on the treatment of CVD and the risk factors for developing CVD. Finally, the prevention of common diseases among seafarers could also be another important venue for ensuring the health and safety of workers on board vessels. For instance, Oldenburg and other researchers recommend to focus more on the prevention of CVD, e.g. in terms of improving the seafarers' nutrition and their possibilities for physical exercise on board [8].

As shown in the coherence analysis, the inconsistencies found between Directive 92/29/EC and international conventions and relevant implementing directives only involve a limited number of more detailed requirements in the international instruments and implementing directives. While this does not lead to double-regulation, for the sake of legal clarity and to avoid confusion, the removal of requirements on medical treatment under Directive 2009/13/EC and Directive 2008/106/EC, which are already covered by Directive 92/29/EC, could be envisaged. This would avoid confusion in the application of medical treatment requirements on board vessels. In addition, the provisions of Directive 92/29/EC could be aligned with the provisions on medical treatment of the ILO MLC, 2006 (i.e. access to medical teleconsultation), of the ILO Work in Fishing Convention, 2007 (i.e. access to medical teleconsultation and guide and information in a language and format understood by the fishermen) and the IMO Convention on STCW (i.e. specific medical training on board seagoing commercial vessels).

²⁴ The ECG can help determine the heart rhythm and improve survival rate in resuscitation

The two ILO conventions are subject to a Council Decision authorising its ratification in the interests of the Union, and the Commission has adopted a proposal for a similar decision in relation to the IMO convention. In addition, the Directive only establishes minimum requirements and MSs can set/apply more detailed or stringent requirements. So the additional requirements set by the ILO conventions could be implemented directly through ratification of the conventions by the MSs. However, if not all MSs observe the conventions, the need to ensure a level playing field across the EU remains.

7.6 Overall conclusion and recommendations

The analyses show that the Directive has been well-implemented in the national legislation and the evaluation points to indicative evidence that enterprises, in general, comply with its provisions. However, it should be noted that this data is weak and fragmented. Moreover, many MSs already had provisions in place before transposing the Directive, and medical treatment on board vessels is also covered in international agreements and conventions.

As the Directive does not address preventive measures, it is unlikely that the Directive has had an effect on the prevalence of accidents. However, the Directive could have had some effects on survival rates after accidents and serious illness. It should be noted that the evidence base is very limited both for workplace and health and safety effects, so no firm conclusion can be drawn.

However, considered that CVD is the most common cause of death on board vessels, we recommend that further emphasis is placed on preventive initiatives to reduce risk factors related to CVDs, i.e. in terms of ensuring healthy nutrition and physical exercise on board ships. Moreover, medical courses could also put additional focus on the prevention and treatment of CVDs. Utilising new technological equipment to improve treatment and diagnosis of disease and/or prevention of accidents is a possible option for larger vessels. The advantages in telemedicine could therefore help reduce mortality on board vessels.

The evaluation points to external inconsistencies in the legislation. These inconsistencies and gaps suggest the potential need to remove the provisions of Directive 2009/13/EC and Directive 2008/106/EC on Medical treatment and to align the provisions of Directive 92/29/EEC on Medical treatment on board vessels with the relevant provisions on medical treatment of the ILO MLC, 2006, the ILO Work in Fishing Convention, 2007 and the STCW.

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