Sjøfartsdirektoratet
Norwegian Maritime Authority

GUIDANCE TO REGULATIONS ON THE MEDICAL EXAMINATION OF EMPLOYEES ON NORWEGIAN SHIPS AND MOBILE OFFSHORE UNITS

Ver 2.4. – October 2026

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1.INTRODUCTION

1.1 ADMINISTRATIVE AND LEGAL

The **Regulations of 5th June 2014 No 805 on the medical examination of employees on Norwegian ships and mobile offshore units** (hereinafter referred as the Health Regulations) are based on various sources. They have their legal basis in Ship Safety and Security Act Section 17, whereas the main part of the medical requirements is taken from the *ILO/IMO Guidelines on the medical examinations of seafarers* (henceforth called the "Guidelines"). The Guidelines are in turn a result of a cooperation between the International Labour Organization (ILO) and the International Maritime Organization (IMO). The ILO are responsible for the Maritime Labour Convention (MLC), whereas the IMO are responsible for the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). The purpose of the Guidelines was to develop an instrument reflecting the contents of both Conventions, and which could be helpful for the flag State when implementing these two Conventions.

1.2 MEDICAL GUIDANCE

The guide to the medical conditions is meant to be dynamic. That is, it will be gradually developed and revised as cases are processed in the appellate body for health cases (henceforth called the appellate body). The selection of diagnoses currently described is built on case processing in the appellate body in the period September 2009 to October 2026.

Feedback from users regarding the need for corrections or requests for additions or elaborations of special topics will be important in the continuous revision process.

An updated guidance will always be available online. Downloads are only valid until a new version is published and are made at the user's own responsibility.

The responsible party for the medical section is the Norwegian Centre for Maritime and Diving Medicine at Haukeland University Hospital (hereinafter referred as the NCMDM), Bergen, Norway.

1.3 WHY WE HAVE HEALTH REQUIREMENTS

When the Ship Safety and Security Act was adopted, a provision regarding health requirements was included in the Act. Section 17 in the Act stipulates that any person who is working on board must be physically and mentally fit for the role and not pose a danger to other persons on board. Each person who works on board (hereinafter referred as person) shall present a medical certificate that confirms that these requirements are met.

«Physically and mentally fit» is a very wide term, and in order to enable persons to document this, there is a need for more concrete health requirements for examination purposes. In addition to being bound by the Ship Safety and Security Act, Norway and the Norwegian Maritime Authority (hereinafter referred as the NMA) have committed to fulfilling the requirements of the Maritime Labour Convention, 2006 (MLC, 2006) and the International Convention on Standards of Training, Verification and Watchkeeping for Seafarers (STCW Convention).

In 2013 The ILO and IMO published the Guidelines on the medical examinations of seafarers, which are guidelines for the member States of the ILO and IMO when developing national legislation in this area.

In order to implement this international set of rules, a more detailed regulation than we currently have in the Ship Safety and Security Act Section 17 is required.

The Norwegian Maritime Authority therefore have developed the Regulations on the medical examination of persons on Norwegian ships and mobile offshore units.

1.4 STCW CONVENTION

The **STCW** Convention (The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers) applies to seafarers serving on board seagoing ships entitled to fly the flag of a Party, cf. Article III first paragraph of the Convention.

Everyone who is on the ship's alarm instructions, and who has tasks related to safety, emergency preparedness or pollution prevention, and who is required to have a certificate of competence, is covered by the STCW.

The STCW prescribes minimum standards relating to training, certification and watchkeeping for seafarers which countries are obliged to meet or exceed. The STCW Convention was originally drafted in 1978, entered into force in 1984, was amended in 1995 and then again in 2010 (The Manila Amendments). The Manila Amendments were adopted on 1 January 2012 and had to be implemented by 2017.

The STCW Convention from 1978 was the first international convention prescribing minimum requirements for training, certification and watchkeeping. Before the STCW Convention entered into force, this varied a lot between different maritime administrations, despite the fact that shipping is an international industry.

The most significant changes in The Manila Amendments are

- New rest hours for seafarers
- New grades of certificates of competence for Able seaman in both deck and engine
- New and updated training, refreshing requirements
- Mandatory security training
- Additional medical standards
- Specific Alcohol limits in blood or breath

Information regarding the STCW Convention at IMO Website:

http://www.imo.org/OurWork/HumanElement/TrainingCertification/Pages/STCW-Convention.aspx

1.5 THE PURPOSE OF THIS GUIDANCE

The purpose of this guidance is to make the Health Regulations more accessible for the users and to standardise the way in which persons and seafarer's doctors use and interpret the Regulations.

Even with a guide, it is important to remember that the Health Regulations are the official governing instrument to use in case processing. Seafarer's doctors shall have a solid knowledge of both the Health Regulations, the Ship Safety and Security Act Section 17, the Public Administration Act and this guidance.

The guidance is meant to work as a support for the exercise of discretion in relation to, for example, epidemiological data.

1.6 THE HEALTH REGULATIONS APPLY TO

The Regulations apply to persons working on board Norwegian ships, (cf. the Health Regulations Section 2) with the exception of those who only:

a) work on board while the vessel is in port;

b) carry out inspections on board.

Furthermore, the Regulations do not apply to persons who have turned 18 years old and who are working on board the following vessels, when the vessel is at sea for continuous periods of no more than three days:

a) fishing vessels of up to 15 metres in overall length or of less than 100 gross tonnage when the vessels are less than 24 metres in length (L);

b) fishing vessels of less than 24 metres in length (L) certified for Bank fishing I or lesser trade areas;

c) cargo ships of less than 15 metres in length (L) engaged on domestic voyages.

Additionally, the Health Regulations also apply to persons working on board a mobile offshore unit, but in this case an exception has been made for persons not serving in positions for which a maritime certificate is required (called "Certificate of Competency" in the Regulations of 22 December 2011 No. 1523 concerning qualifications and certificates for seafarers). These persons may choose whether they want to use a seafarer's doctor and be issued a medical certificate in accordance with the maritime legislation, or whether they want to see a petroleum doctor and be issued a medical certificate in accordance with the Regulations from the Norwegian Directorate of Health. In other words, a person working with, for example, seismology or in the canteen may choose which type of medical certificate to obtain when working on a Norwegian mobile offshore unit. Persons in positions that require a maritime certificate, such as the captain, an engineer and a mate must still have a medical certificate pursuant to the maritime Health Regulations discussed in this guide.

1.6.1 THE HEALTH REGULATIONS CONCERNS SEAFARER'S DOCTORS

Definition *"Seafarer's doctor":* A medical practitioner approved for the purpose of conducting medical examinations and making decisions in accordance with the provisions of the Health Regulations.

1.7 PUBLIC BODIES INVOLVED IN THE HEALTH REGULATIONS

The Ministry of Trade, Industry and Fisheries is the Ministry responsible for the Ship Safety and Security Act and the derived Health Regulations.

The Norwegian Maritime Authority is the government agency which has been given the authority to develop legislation and to carry out the supervision of Norwegian ships, persons working on board and seafarer's doctors.

See www.sdir.no for more information.

The Norwegian Centre of Maritime and Diving Medicine at Haukeland University Hospital is Norway's national centre of excellence in maritime and diving medicine. It is authorised by the Parliament and acts as adviser to the Norwegian Maritime Authority. See Norwegian Centre for Maritime and Diving Medicine - Helse Bergen HF for more information.

1.8 RESPONSIBLE PARTY AT THE NMA

The responsible party is the Section for Seafarers in the Norwegian Maritime Authority.

1.9 DEVELOPMENT OF THE GUIDANCE

Responsible legal adviser at the NMA has been the main editor in the development of the Health Regulations. Medical advisors at the NCMDM have developed the medical part of this Guidance.

2 INCLUDED IN THE HEALTH REGULATIONS

2.1 THIS IS REQUIRED IN ORDER FOR THE PERSON TO GET A MEDICAL CERTIFICATE

The person must be examined by a seafarer's doctor in accordance with the requirements of the Health Regulations. Lists of approved seafarer's doctors can be found at the NMA web site, and the person may freely choose the preferred seafarer's doctor.

The seafarer's doctor shall, after the examination, assess the person's health against the requirements of the Health Regulation Section 1, as elaborated in the Appendix to the Regulations.

If the doctor finds that the person fulfils the requirements laid down by the Health Regulations, the doctor shall issue a medical certificate.

2.2 WHO CAN ISSUE A MEDICAL CERTIFICATE

Only seafarer's doctors approved by Norway may issue medical certificates pursuant to the Health Regulations.

The seafarer's doctor's approval certificate shall be visibly placed in the office of the seafarer's doctor. This certificate shall state the duration of the approval.

A medical certificate will not be valid if the seafarer's doctor's approval is expired. It is therefore important that the person makes sure that the seafarer's doctor's approval is not expired when obtaining a medical certificate.

2.3 DUTIES IMPOSED ON THE COMPANY, MASTER AND THE PERSON AS REGARDS THE MEDICAL CERTIFICATE

The company has a duty to ensure that all persons working on their (Norwegian) ships have a valid medical certificate, cf. Ship Safety and Security Act Section 6.

The master shall participate in ensuring that the person working on board have a valid medical certificate, cf. the Act Section 19 second paragraph (d). The medical certificate shall be kept by the master on board in its original form, cf. the Regulations of 22 December 2011 No. 1523 concerning qualifications and certificates for seafarers Section 20.

The person has a duty to present a valid medical certificate in original form, cf. the Ship Safety and Security Act Section 20 first paragraph (d), ref. the Regulations of 22 December 2011 No. 1523 concerning qualifications and certificates for seafarers Section 20.

Any person that has reason to believe that the requirements for a medical certificate are no longer satisfied shall inform the master or the company and consult a seafarer's doctor, cf. the Health Regulations Section 6. Furthermore, the person must submit to medical examination if the company or master considers that the health requirements may no longer be met, cf. the Ship Safety and Security Act Section 17, ref. the Health Regulations Section 6.

2.4 A PERSON IS REQUIRED TO HAVE A VALID MEDICAL CERTIFICATE

Any person working on board a Norwegian ship shall have a valid medical certificate. See Medical certificate - Norwegian Maritime Authority for detailed information of accepted medical certificates on Norwegian ships.

Persons who work on board a mobile offshore unit in a capacity for which a certificate of competency is not required pursuant to the Regulations of 22 December 2011 No. 1523 concerning qualifications and certificates for seafarers, may as an alternative hold a medical certificate issued in accordance with the Norwegian Health Directorate's Regulations.

Persons holding medical certificates that expired up to a month earlier, may commence service on board when a new medical certificate cannot reasonably be obtained without delaying the vessel.

This is a specific exemption, and it will only be applicable in cases where conditions have arisen that company, master and person could not have foreseen. Poor planning and oversights will not be considered as grounds for using this provision. Illness or injury to a crew member scheduled to work and whom it was not possible to replace by other means than by a person without a valid medical certificate is an example of a case where this provision may be applied.

3 APPROVAL AS A SEAFARER'S DOCTOR

In order to become an approved seafarer's doctor, you must meet the requirements in section 7 in the Health Regulations Section 7. Medical practitioners with practice in Norway shall be approved as seafarer's doctor by the Norwegian Maritime Authority.

Medical practitioners with practice outside of Norway shall be approved as seafarer's doctor by a foreign service mission on behalf of the Norwegian Maritime Authority.

See the NMA website for detailed information and application form.

It is not possible to issue valid medical certificates pursuant to the Health Regulations without first being approved by the NMA or a Norwegian foreign service mission.

Medical practitioners already approved must apply for renewal of their approval no later than one month before the expiry of the current approval. This is important in order to avoid the situation where the doctor is without approval for a period while the application for renewal is being processed.

In exceptional cases, the Norwegian Maritime Authority may grant exemptions from the requirements for approval as seafarer's doctors.

3.1 A BASIC COURSE IN MARITIME MEDICINE HAS TO BE COMPLETED

Doctors not approved as a seafarer's doctor shall complete a course in maritime medicine approved by the NMA before being approved as a seafarer's doctor.

A curriculum has been prepared for what a course should contain, and which covers competence requirements in accordance with the Health Regulations Section 7. It is only the Norwegian Centre for Maritime and Diving Medicine that arranges course in compliance with the curriculum.

For more information about courses in maritime medicine, see the NCMDM's web site.

3.1.1 REFRESHER COURSES IN MARITIME MEDICINE:

Refresher course is mandatory for all seafarer's doctors, cf. the Health Regulations Section 7 first paragraph letter c). Seafarer's doctors shall complete a refresher course approved by the NMA during each approval period. A completed refresher course is a prerequisite for further approval.

4 QUALITY SYSTEM FOR A SEAFARER'S DOCTOR

Pursuant to the Health Regulations seafarer's doctors are required to have a quality system ensuring that the work is carried out in accordance with the requirements of the Health Regulations.

The quality system shall be in accordance with an internationally recognised standard, cf. the Health Regulations Section 7 first paragraph (h). The seafarer's doctor is not required to have the quality system certified. It is up to the individual doctor to find the standard best suited for his or her practice, and to decide how to obtain and implement their quality system.

The seafarer's doctor shall submit a self-declaration form to the NMA or the foreign service mission when he/she applies for approval or re-approval as a seafarer's doctor. If the quality system is changed/replaced for any reasons, a new self-declaration form shall unsolicited be submitted to the NMA.

The main principle of a quality system is that the company shall develop, deliver and improve products and services in accordance with both specified requirements and expectations. The quality system shall clarify how the company is organised and managed in order to meet both external and internal quality requirements and expectations.

When the NMA carries out supervision, the seafarer's doctor must demonstrate that the quality system is functioning. The seafarer's doctor must be able to account for one's administrative procedure, including medical decisions.

4.1.1 MINIMUM REQUIREMENTS FOR A QUALITY SYSTEM

The following minimum requirements shall be included in a seafarer's doctor's quality system:

4.1.1.1 QUALITY MANUAL

The seafarer's doctor must develop and maintain a quality manual for quality management and the documented routines which have been established. The following paragraphs concretise the contents of a quality manual.

4.1.1.2 QUALITY POLICY

The seafarer's doctor must enter one's quality goals for the work as a seafarer's doctor in the quality manual. An example of a quality goal is: "The practice as seafarer's doctor shall be carried out in accordance with the Health Regulations, the Public Administration Act and sound medical judgement."

4.1.1.3 NORMATIVE DOCUMENTATION

The seafarer's doctor must identify the documents, both internal and external, which are normative for the practice as a seafarer's doctor. The quality manual is a typical internal normative document, whereas laws and regulations are typical external normative documents.

The quality system shall show the requirements applicable to seafarer's doctors and their products, i.e. medical certificates and declarations of unfitness. The Health Regulations, the guidance and the Public Administration Act are examples of external normative documents which concretise such requirements. For doctors in Norway, another such normative document will be the Health Personnel Act.

4.1.1.4 A DOCUMENTED ROUTINE FOR THE CONTROL OF NORMATIVE DOCUMENTS SHALL BE ESTABLISHED, IN ORDER TO

- approve the adequacy of documents before they are published
- review and, if necessary, update and re-approve documents
- ensure that amendments of current documents are made evident
- ensure that the correct version of relevant documents is available where they are being used
- ensure that documents are readable and easy to identify
- ensure that documents with external origin, which the seafarer's doctor has decided are necessary for the planning and operation of the quality management system, have been identified, and that the documents are being distributed to the relevant recipients (seafarer's doctors and any other persons forming part of the administrative procedure)
- prevent unintentional use of out-dated documents, and apply the use of appropriate identification (e.g. mark the document with "expired version") for documents which are to be kept for a specific purpose, so that they are not confused with current applicable documents

4.1.1.5 THE MAIN PROCESSES OF THE PRACTICE

The main processes of a seafarer's doctor's practice are listed below. The following supplementary points are important to take into consideration. (Note that the list is not exhaustive, there may also be other processes carried out by the seafarer's doctor, which must be identified and described.)

MEDICAL FITNESS ASSESSMENT

- Does the medical record document the evidence, clinical reasoning and regulatory basis for the decision?
- Is the medical documentation relevant, sufficient and up to date?
- Have all necessary supplementary examinations and investigations been completed?
- Has an appropriate specialist opinion been obtained where necessary?
- Does the referral ask specific, relevant questions about the condition, duties and fitness assessment?
- Is the assessment based on adequate epidemiological and clinical evidence?
- Has the likelihood of a relevant medical event during the certificate period been individualized?
- Has the likelihood been assessed using current evidence and sound clinical judgement?
- Does the medical record show that the individual's duties, safety functions and working conditions were considered?
- Have the potential consequences for the individual, others on board and the vessel been assessed?
- Has the overall risk been assessed under the Health Regulations (likelihood × consequence)?
- Have appropriate risk-mitigating measures been assessed?

ISSUE OF MEDICAL CERTIFICATE

- Has the person been informed in writing of the grounds for the decision?
- Has the person been informed in accordance with the Public Administration Act of the possibility to appeal the seafarer's doctor's decision or to apply for an exemption?

ISSUE OF LIMITED MEDICAL CERTIFICATE

- Has the person been informed in writing of the grounds for the decision?
- Has the person been informed in accordance with the Public Administration Act of the possibility to appeal the seafarer's doctor's decision or to apply for an exemption?

ISSUE OF PERMANENT, TEMPORARY OR PROVISIONAL DECLARATION OF UNFITNESS

- Has the person been informed in writing of the grounds for the decision?
- Has the person been informed in accordance with the Public Administration Act of the possibility to appeal the seafarer's doctor's decision or to apply for an exemption? (Note: it is not possible to apply for exemption in the event of a provisional declaration of unfitness.)

A description of the main processes and their interrelation shall be included in the quality manual.

4.1.1.6 SYSTEM FOR NON-CONFORMANCE REPORTING AND IMPROVEMENT SUGGESTIONS

The seafarer's doctor must have a system for the treatment of non-conformance. The system shall record non-conformities and corrective actions and shall contain an overview of preventive measures.

A non-conformity in the practice as seafarer's doctor will typically be feedback given to the seafarer's doctor demonstrating that one's decision had a material (medical) or procedural (non-compliance with the Health Regulations or the Public Administration Act) error. Failure to check the person's ID will for instance be a procedural error, which will result in the issued medical certificate

being invalid. If the seafarer's doctor is made aware of this error, corrective measures shall be implemented (invite the person to a new examination and issue a valid medical certificate). The seafarer's doctor must then consider which preventive measures to implement in order to avoid such incidences in the future.

Procedures shall be established for non-conformance treatment, corrective measures and preventive measures. If appropriate, these procedures may be gathered in one common procedure.

4.1.1.7 REQUIREMENTS FOR REGISTRATIONS

As part of the quality system, the implementation of the below points must be recorded with traceability. The registrations may e.g. be made in a log or in a report of the activity (in a Word document, on a paper, etc.; there are no formal requirements other than the registration being in writing).

COMPETENCE AND TRAINING

- Competence and training
  The Health Regulations require the seafarer's doctor to complete a course in maritime medicine. The completion of the course and other forms for competence enhancement as seafarer's doctor or for other persons shall be recorded.

- Identification and traceability
  The decisions made by the seafarer's doctor shall be traceable and identifiable. This shall be ensured through the new electronic administrative system for medical certificates and declarations of unfitness. For other documents, such as medical examination forms and medical records, the seafarer's doctor must describe how these are stored and made traceable, e.g. by means of a filing system. This will normally be regulated by national health legislation.

- Calibration and verification of measuring equipment
  It must be stated in the quality manual how the seafarer's doctor ensures the proper functioning of the equipment used.

- Corrective/preventive measures
  When a non-conformity has been registered, the seafarer's doctor must make a memo of how the non-conformity was rectified, and how this non-conformity is being followed up in order to prevent the same non-conformity from reoccurring.

- Internal audit / management review
  The seafarer's doctor or other person in the management must regularly review and evaluate the quality system, in order to ensure its proper functioning.
  A report shall be made of internal audits / management reviews.

  A documented routine shall be established in order to stipulate the control necessary in order to identify, store, protect, retrieve, maintain and delete registrations. Registrations shall be readable and easy to identify and retrieve.

4.1.1.8 INTERNAL AUDIT BY THE MANAGEMENT

The seafarer's doctor shall carry out internal revisions at least once a year, in order to determine whether the quality system is in accordance with the requirements for the practice, and whether the system has been efficiently implemented and maintained.
The management / seafarer's doctor shall in addition review the quality system in order to identify and implement measures to strengthen the system.

A routine for the planning and execution of internal revisions shall be established and documented.

5 REGISTERING MEDICAL CERTIFICATES AND DECLARATIONS OF UNFITNESS

Seafarer's doctors in Norway, EEA-countries and secure third countries who have a Norwegian ID- / D-number shall use the NMA's online system for registering medical certificates and declarations of unfitness.

Secure third countries are those for which the European Commission has confirmed a suitable level of data protection on the basis of an adequacy decision. In those countries, national laws provide a level of protection for personal data which is comparable to those of EU law. The third countries which ensure an adequate level of protection are[1]: Andorra, Argentina, Canada (only commercial organizations), Faroe Islands, Guernsey, Israel, Isle of Man, Japan, Jersey, New Zealand, Republic of Korea, Switzerland, the United Kingdom and Uruguay. Data transfer to these countries is expressly permitted. Consequently, NMA approved seafarer's doctors in the above-mentioned countries may have access to the NMA's online system.

Seafarer's doctors with practice in a third country without adequate security measures according to General Data Protection Regulation (GDPR), must issue medical certificates (KS 0499-1) and declarations of unfitness (KS 0415) on paper forms.

6 GENERAL DATA PROTECTION REGULATION

The European Commission has decided that transfer of personal information between European Economic Area (EEA) countries and third countries without adequate security measures is not in compliance with the European General Data Protection Regulation (GDPR).

As Norway is part of the European Economic Area, the European Commission's decisions are followed. This implies that GDPR overrides the NMA's Health Regulations. Consequently, the approved seafarer's doctors in unsecure third countries do not have access to the NMA's online system.

Due to this it is very important that the person brings his/her most recently issued medical certificate to you, and that you shred it at the end of the medical examination.

7 DATA PROCESSING AGREEMENT

To comply with the GDPR regulations, the NMA must enter into a Data Processing Agreement with each of the approved seafarer's doctors who have access to the NMA's online system.

The reason for this is that the seafarer's doctors process personal information on behalf of the NMA. Processing of personal information takes place in the Altinn-portal where the seafarer's doctors get access to medical certificates and declarations of unfitness for seafarers.

Entering into a Data Processing Agreement is a requirement for the approval as seafarer's doctor. The agreement is sent by the NMA to the relevant seafarer's doctor.

8 RECORDING INFORMATION IN THE NMA'S ONLINE SYSTEM

See "Guidelines-for-registering-medical-certificates-and-declarations-of-unfitness-in-the-norwegian-maritime-authoritys-system.pdf" for further information.

[1] European Commission

8.1 IF THE NMA'S ONLINE SYSTEM IS UNAVAILABLE

If the online system is unavailable for the approved seafarer's doctor due to unforeseen reasons – paper forms of medical certificate and declarations of unfitness shall be issued.

As soon as possible these paper forms should be replaced with an electronic form, and a new medical certificate/declaration of unfitness should be sent to the person.

It is important that this procedure is followed, to ensure that the information in the electronic registry and on the person's medical certificate / declaration of unfitness is identical.

8.2 CONDUCT OF MEDICAL EXAMINATION IN ACCORDANCE WITH THE HEALTH REGULATIONS

Medical examination should be carried out with the purpose to assess whether the person is medically fit for work on board Norwegian ships, cf. the Health Regulations Section 1.

The seafarer's doctor shall decide which examinations and supplementary tests to carry out, based on knowledge about best medical practice and sound medical assessment in accordance with the attachment to the Regulations and this guidance.

The approved seafarer's doctor shall use the "Form for assessment of medical fitness" (KS 0497 E) as it is tailor-made to reveal whether the seafarer meets the requirements sat in the Health Regulations. By using the form KS 0497, one is certain that only the tests mentioned in the Health Regulations are carried out during the medical examination.

8.3 RELEVANT INFORMATION TO THE SEAFARER'S DOCTORS

On the NMA website the seafarer's doctors will find relevant information, guidance materials, and relevant forms for use in their work. By using the the online versions, they will have access to the most up-to-date information and any revisions or updates that may be made.

8.4 DOCUMENTS THE PERSON SHALL PRESENT AT THE HEALTH EXAMINATION

- Proof of identification
- The recently issued medical certificate / declaration of unfitness
- Relevant reports from other medical doctors
- Statements from person when relevant

The person shall submit a self-declaration on one's health on the form prescribed by the NMA. The self-declaration shall be signed in the presence of the seafarer's doctor and be kept by the seafarer's doctor.

9 THE PUBLIC ADMINISTRATION ACT

9.1 THE PUBLIC ADMINISTRATION ACT IS IMPORTANT TO THE SEAFARER'S DOCTOR

It is the responsibility of the Ministry of Trade, Industry and Fisheries and the Norwegian Maritime Authority as the administrative agency to issue medical forms to persons on Norwegian flagged ships.

The NMA has chosen not to employ doctors directly, rather approve external doctors to issue medical forms on their behalf – and empower them to act as administrative agencies as far as issuance of such medical forms is concerned. The person will have the same privileges as if the doctor was employed directly by the NMA.

When an NMA approved seafarer's doctor makes a decision with legal authority in the Health Regulations, this is regarded as an administrative decision under the Public Administration Act. The seafarer's doctor therefore has to comply with the administrative procedures derived from this Act.

9.2 THE APPROVED SEAFARER'S DOCTOR SHALL BE FAMILIAR WITH THE PUBLIC ADMINISTRATIVE PROCEDURES

The NMA approved seafarer's doctor shall be familiar with all relevant administrative procedures and be able to inform the person regarding rights of appeal and applications for exemptions, as well as assisting them in such procedures.

The seafarer's doctor is also expected to substantiate one's decision stating medical as well as legal grounds for the decision.

9.3 ENGLISH VERSION OF THE PUBLIC ADMINISTRATION ACT

The English version of the Public Administration Act is to be found at the NMA website.

In all cases of dispute, the Norwegian version is the official one, and the one which overrule any discrepancies in translation.

Questions regarding public administration procedures or case handling, as well as questions regarding the Health Regulations should be forwarded to the responsible legal adviser at the NMA.

9.4 ADMINISTRATIVE LAW TOPICS OF SPECIAL IMPORTANCE TO THE SEAFARER'S DOCTOR

The below presentation on the Public Administrative Procedures, does not cover everything the NMA approved seafarer's doctor shall be familiar with in one's practice. The purpose of this presentation is to introduce some of the more important topics for the doctors.

Anyone who misses important topics in this presentation is encouraged to send new suggestions for topics to post@sdir.no. This will be an important contribution to the improvement of this guidance.

9.4.1 DECISIONS REGULATED BY THE PUBLIC ADMINISTRATION ACT

One must look at Sections 1 and 2 to find the answer. Section 1 is concerned with activities conducted by administrative agencies, included private legal persons (NMA approved seafarer's doctors) who make individual decisions. An individual decision is defined in Section 2 as a decision regarding someone's rights (the right to get a medical certificate if requirements of the Health Regulations are met), or duties to one or several defined persons.

A decision by the approved seafarer's doctor to issue a medical certificate fulfils both requirements and is therefore considered to be regulated by the Public Administration Act.

9.4.2 THE ASSESSMENT OF CONFLICTS OF INTEREST/LEGAL DISQUALIFICATION

The Public Administration Act Section 6 discusses how the seafarer's doctor approved by Norway shall assess one's own possible conflicts of interests and possible legal disqualification. These requirements are objective – the question is not whether the seafarer's doctor thinks that oneself will be able to reach an impartial decision, rather whether the relationship between the doctor and the person, a shipping company, an employers' or employees' organization is of a kind apt to create doubt about the seafarer's doctor's impartiality.

As a general rule, the seafarer's doctor cannot be employed by a shipping company, an employees' or employers' organisation. This has nothing to do with the seafarer's doctor's personal character, but such a relationship could make other people uncertain about the seafarer's doctor's ability to discern between his different roles.

It has been accepted that the seafarer's doctor may act as an external resource for a shipping company's occupational health service. The more work the doctor does for a shipping company, the nearer he/she comes the point of disqualification regarding medical examinations of seafarers and individual decisions on behalf of the NMA. Should it happen that the amount of work the seafarer's

doctor carries out is more or less like what would be done by an employed doctor of the company, the seafarer's doctor should not carry out medical examinations of persons employed by that company.

Furthermore, if the relationship between the seafarer's doctor and the company is so close that it looks like the seafarer's doctor cannot be impartial, the doctor should consider resigning as an NMA approved seafarer's doctor.

The Public Administration Act Section 6 also lists other causes of legal disqualification to handle cases under the Act, mostly concerned about family relationship, friendship and business relationship.

The assessment regarding possible conflicts of interest and possible legal disqualification shall be carried out by the seafarer's doctor prior to any medical examination which leads to an individual decision (medical certificate or declaration of unfitness).

9.4.3 DUTY TO PROVIDE GUIDANCE

The seafarer's doctor approved by Norway is a representative of the governmental administration of the Health Regulations. As such, one has a duty to provide individualized adjusted guidance to persons who see the doctor for a medical examination, cf. the Public Administration Act Section 11.

The seafarer's doctor shall give such guidance that the person is capable to take care of one's own interests and rights – which means that the doctor must inform about:

- The right to appeal the seafarer's doctor's decision
- The right to apply for an exemption from the requirements of the Health Regulations
- When additional information, examination or investigation is needed, the seafarer's doctor shall advise the person on how this can be obtained; see also the point below regarding the duty to clarify a case and the duty to inform, cf. the Public Administration Act Section 17
- Inform about the content of the Health Regulations
- Inform about the content of the Appendices to the Health Regulations
- Assist in writing an appeal or application for exemption. It is important, though, that the person's name and signature is on the document, even if it is written by the seafarer's doctor
- Assist in sampling all necessary documents for the appeal or application for exemption
- Inform about the right to be represented/assisted by a lawyer or another deputized person in the case handling, cf. the Public Administration Act Section 12.

9.4.4 DUTY OF SECRECY

Following the Public Administration Act Section 13, the seafarer's doctor has duty to keep secret all information received or retrieved during the handling of the case. This duty comes in addition to the general duty of secrecy derived from the Health Personnel Act.

9.4.5 DUTY TO CLARIFY THE CASE AND TO PROVIDE INFORMATION

The seafarer's doctor shall ensure that the case is clarified as thoroughly as possible before any administrative decision is made, which means that the facts of the case shall be clarified and that the seafarer's doctor has a duty to investigate circumstances which may be advantageous or disadvantageous to the person's case. Information provided by the person shall be verified where this is possible.

That the case shall be clarified as much as possible, should not be read literally. The seafarer's doctor should assess what is practical (e.g. time and cost consumption) in each case.

The main point is that the case is clarified sufficiently for the seafarer's doctor to be able to reach a decision whether a medical certificate should be issued or not in a sound way.

9.4.6 THE PERSON'S RIGHT TO ACQUAINT ONESELF WITH THE DOCUMENTS OF THE CASE

The person has the right to see all documents of a case – i.e. the letters and the statements which have been written or have been used as evidence in the case.

The right to acquaint oneself with the documents does not include documents which have been written solely for internal case preparation. This would first and foremost be documents written by the seafarer's doctor, i.e. the document is not shared with external parties or other administrative agencies.

Documents shared with the NMA, or the appellate body will not be exempted from this rule.

9.4.7 THE DECISION OF THE SEAFARER'S DOCTOR SHALL ALWAYS BE JUSTIFIED

On making an individual decision (issuing a medical certificate or a declaration of unfitness), the seafarer's doctor shall always inform about the grounds for the decision. This information shall always be in writing.

This information is of special importance in cases where a declaration of unfitness is issued.

In such cases, the person needs the seafarer's doctor's substantiation in order to decide whether to file an appeal or apply for an exemption.

The information shall be given together with the decision.

On discussing the grounds for the decision, the relevant parts of the Health Regulations or the appendices shall be pointed out as well as the medical reasoning in accordance with the facts of the case, sound clinical judgement, best clinical practice and the risk assessment carried out.

In cases where a Declaration of Unfitness has been issued, the applicable rules must be explained to the individual concerned.

9.4.8 DUTY TO INFORM THE PERSON ABOUT THE DECISION

The information about the decision usually should be given together with the appropriate medical certificate / declaration of unfitness.

If the decision is not made during the medical examination, notification about the decision should be sent to the person as soon as possible.

9.4.9 THE PERSON HAS THE RIGHT TO APPEAL AND APPLY FOR EXEMPTIONS FROM THE HEALTH REQUIREMENTS

A person who is not satisfied with the decision of the seafarer's doctor, has the right in accordance with the Health Regulations Section 15, cf. the Public Administration Act Section 28, to appeal the seafarer's doctor's decision. The appeal does not need to be justified or sensible in the eyes of others – if the person wants to appeal, he has the right to do so.

A person who regards him-/herself as medically fit for duty on board ships in accordance with the main objective of the Health Regulations, even though the formal requirements of the appendices are not met, has the right to apply for an exemption from the formal requirements in accordance with the Health Regulations Section 16, cf. the Public Administration Act Section 28.

9.4.10 THE COMPANY'S LEGAL INTEREST IN APPEALING THE SEAFARER'S DOCTOR'S DECISION

Moreover, the company may lodge an appeal against the decision of the seafarer's doctor when they have a «legal interest in appealing the case», cf. the Public Administration Act Section 28. In order to have legal interest in appealing the case, the company must take a practical and relevant interest in a legal clarification of the decision, which is normally the case for shipping companies who employ the

party in the appeal. Whether the company has a legal interest in appealing a case will be determined based on an overall assessment of the validity of the claim for the company, and whether the company has a real need to have the claim settled. Since the company is responsible for the safety on board, there is usually legal interest in appealing the case when a company appeals against a decision made by a seafarer's doctor.

If the appeal is accepted due to legal interest, the seafarer's doctor must notify the person working on board as soon as possible, cf. the Public Administration Act Section 33 third paragraph. Reference is still made to the Public Administration Act Section 16 third paragraph on the omission of advance notification. At the same time, a deadline for comments must be set. If the person working on board is notified by a letter, a copy of the appeal must be attached unless the person pursuant to the Public Administration Act Section 19 may be refused access.

9.4.11 THE DUTIES OF THE SEAFARER'S DOCTOR IN CASES OF APPEAL OR APPLICATIONS FOR EXEMPTIONS

In such cases, the seafarer's doctor's duties consist of the 6 steps mentioned below:

1. Assess the case once again and decide whether there is new information which should bring about a change of the original decision.
2. Inform the person of the right to appeal (or apply for exemption), and how such cases are handled.
3. Inform about the Health Regulations in a way that enables the person to formulate one's appeal or application properly.
4. If the person so wants, assist in the writing of the appeal/application. It is important that the document contains information regarding which decision the appeal is about, what change in the decision that is asked for, and the grounds claimed as reason for the appeal.
5. Ensure that the person has signed the appeal/application. It is the person who has the right to appeal/apply for exemption, not the seafarer's doctor, and it is the person who shall sign the document, even if it is written by the seafarer's doctor. It should however appear from the document which assistance the doctor has provided.
6. Post the appeal/application with all necessary documents (see duty to clarify the case) to the NMA.

The deadline for lodging an appeal is three weeks from the time the person received information about the decision. There is no deadline for an application for exemption.

9.4.12 POSSIBILITY TO CHANGE THE DECISION

If the seafarer's doctor should receive information which indicates that one's decision about issuing a declaration of unfitness or a limited/restricted medical certificate is not correct, the doctor has the power to change this decision of oneself.

The possibility to change a decision in a way that would be disadvantageous to the person (from medical certificate to a declaration of unfitness or a limited/restricted medical certificate) is strongly limited – which means that the seafarer's doctor should discuss this case with the NMA prior to making such decisions.

The possibility for change of decision is not any longer there, when the case has been considered by the appellate body. The decision by the appellate body cannot be changed by the seafarer's doctor, due to the fact that the case is decided by a superior body (appellate body). Change of the decision shall in such cases be done by the appellate body, in the same way as the seafarer's doctor can change one's own decision in accordance with the Public Administration Act Section 35.

9.4.13 LEGAL COSTS

A person may have appreciable costs related to a change of decision covered, if the change is advantageous to the person, cf. the Public Administration Act Section 36. For further information, please contact the NMA.

9.4.14 ADMINISTRATIVE CHECKLIST FOR THE MEDICAL EXAMINATION

- Has the identity of the person been confirmed by passport or other proof of identity?
- Has the person been informed that the seafarer's doctor acts in the capacity as a approved seafarer's doctor approved by Norway, and not in the capacity of a general practitioner, an occupational physician or other role?
- Is the declaration signed, dated and stamped?
- If relevant, has the person signed personally on the documents regarding appeal or application for exemption?
- If relevant, are all necessary documentation filed together with the appeal/application for exemption?

10 WORKING PLACES AND JOB POSITIONS ON BOARD SHIPS

10.1 DECK DEPARTMENT

- Captain/master
  The Captain has the senior authority and the responsibility for the safety and operation of the vessel and for prevention of pollution. The Captain is furthermore responsible for fulfilling obligations laid down by law (the Norwegian Maritime Code, the Ship Labour Act, the Ship Safety and Security Act), for ensuring that the watchkeeping arrangements on board do not at any time compromise safety, that the navigation is carried out by a competent person, and that the crew is well rested. The Captain is also responsible for e. safe loading/unloading, that the certificates are valid at all times, and that the ship's safety management system is being followed up

- Chief Officer/Chief mate
  The Chief Officer is the Captain's substitute and right hand. As laid down by law, Chief Officer is the second in command on board and reports directly to the Captain. Should the Captain become incapacitated, the Chief Officer will step into the role of the Captain.
  The Chief Officer is in charge of the deck department and is responsible for planning the loading/unloading and the ship's voyage in cooperation with the Captain. The Chief Officer often works nights. The Chief Officer is often also the designated security and medical officer. The position is listed in the muster list and emergency instructions

- 2nd Officer
  Deck officer, undertakes bridge watches, participates in route planning and maintains/upgrades charts and nautical publications. Furthermore, responsible for the maintenance of all lifesaving and fire-fighting equipment as directed by the Chief Officer. The position is listed in the muster list and emergency instructions

- 3rd Officer
  Deck officer, undertakes bridge watches. Odd jobs as directed by Chief Officer/2nd Officer. The position is listed in the muster list and emergency instructions

- Cadet
  Training position. Period of practical training on board following school.
  Practical/theoretical training together with the person responsible for the training on board, in accordance with the applicable requirements. Otherwise, same as Able Seafarer deck or Able Seafarer engine. Not listed in the muster list and emergency instructions

- Bosun/Boatswain
  In charge of all work on deck. Delegates tasks and participates to a certain extent. Normally not a part of the navigational watch. The position is listed in the muster list and emergency instructions

- Able seafarer deck / Able-bodied seafarer (AB)
  General maintenance and cleaning tasks on deck. Cleans and prepares cargo spaces and cargo tanks. Forms part of the navigational watch. Periodically physically strenuous work. Exposed to the elements (cold/heat depending on trade area). The position is listed in the muster list and emergency instructions. Often has smoke diving tasks.

- Ordinary seafarer
  Training position, otherwise same as Able Seafarer deck. The position is listed in the muster list and emergency instructions. Often has smoke diving tasks.

- Trainee rating deck
  Training position, otherwise same as Able Seafarer deck. Not listed in the muster list and emergency instructions

- No lone working or solo watchkeeping
  The restriction **"not to keep a navigational watch alone"** or **"no sole watchkeeping"** means that the individual may not stand watch alone and must be accompanied by another person while on watch. The person accompanying them must be capable of taking over the duties and functions of the individual subject to the restriction if necessary. This requires that the other person possesses the necessary certification, competence, and experience.

  It is not sufficient for other persons with equivalent qualifications or certification to be present elsewhere on board the vessel. The requirement means that the other person must be physically present together with the individual who is subject to the **"no sole watchkeeping"** restriction. This also applies during arrival and departure operations. Consequently, the additional person may not leave the bridge until the vessel has been safely moored alongside the quay.

10.2 ENGINE DEPARTMENT

- Chief Engineer Officer
  The Chief Engineer Officer is the senior engineer officer who is responsible for the mechanical propulsion and the operation and maintenance of the mechanical and electrical installations on board the ship. The Chief Engineer Officer ensures that the ship's operational and safety management system is maintained by competent technical personnel in accordance with laws and regulations. Within the department the Chief Engineer Officer is also responsible for i.e. HSE, delivery and storage of goods, stays in shipyards and finances. Usually works in the daytime with tasks that are not physically demanding but is in charge of operations in the event of damage or fire. May be a smoke diver, and has a leading role during evacuation of the ship

- 2nd Engineer Officer
  The 2nd Engineer Officer is next in rank to the Chief Engineer Officer and will assume the Chief Engineer Officer's responsibilities if the Chief Engineer Officer becomes incapacitated. The 2nd Engineer Officer is a working supervisor, often works nights and has physically demanding tasks. Often has smoke diving tasks

- 3rd Engineer Officer
  The 3rd Engineer Officer is on the same operational level as the officer in charge of an engineering watch and is thus the person responsible for a watch in the engine-room during a given time period. Often works nights and has physically demanding tasks. May have demanding tasks in the event of damage or fire, such as smoke diving

- 4th Engineer Officer
  Rarely used in Norway but assists the 3rd Engineer Officer. The position is listed in the muster list and emergency instructions

- Fitter/Repairman deck/engine
  The Fitter is the "janitor" of the ship. Performs tasks like a mechanic but will in addition carry out a lot of steel work and welding. Physically demanding tasks with some heavy lifting

- Pumpman
  The Pumpman oversees, operates and maintains cargo and ballast pumps. Participates at

all times during loading/unloading and participates in tank cleaning. The tasks require accuracy, good understanding/knowledge and safety awareness. May work both day and night. Is exposed to environmental factors such as chemicals, noise, etc.

- Motorman / Able Seafarer engine
  Operates machinery, carries out engine repairs, maintenance and cleaning tasks in the ship's engine room as directed, forms part of an engineering watch together with an engineer officer, works with turning, welding and plumbing tasks, often undertakes mooring tasks during arrival and departure. Physically demanding labour, exposed to environmental factors such as chemicals, dust, noise, etc. The position is listed in the muster list and emergency instructions

- Greaser/Wiper
  Assists the Motorman. The position is listed in the muster list and emergency instructions

- Refrigeration Engineer Officer
  Supervises the operation, maintenance and repair of the ship's HVAC equipment/system, cold service system, ventilation, refrigeration system and air conditioning system. Position on large freezer ships and cruise ships. The position is listed in the muster list and emergency instructions

- Engine-room Attendant
  Same as Motorman. Position on smaller ships in coastal waters. Is normally alone in the machinery space and is then additionally responsible for the engine department. The position is listed in the muster list and emergency instructions

- Environmental Engineer Officer
  Position on large passenger ships. Takes care of waste and is responsible for incinerators. The position is listed in the muster list and emergency instructions

- Stoker
  Oversees and maintains large marine boilers. Forms part of watches and has physically demanding tasks. The position is listed in the muster list and emergency instructions

10.3 GALLEY

- Chief Steward
  Administrative position. Head of cook and catering staff. Responsible for purchasing provisions and planning the menu. The position is listed in the muster list and emergency instructions

- Cook
  Prepares all food. Cleans galley and provision rooms. Some office work. The position is listed in the muster list and emergency instructions

10.4 OTHER JOB POSITIONS ON BOARD

- Electrician / Electro-technical Officer/rating
  Supervises and maintains all the electrical equipment with appurtenant components. Mostly works in the field, no heavy lifting. The position is listed in the muster list and emergency instructions if this position forms part of the safe manning personnel

- Catering personnel
  On passenger ships: General cleaning of the hotel department. Waiter.

On cargo ships: Cleaning of all accommodation spaces. Assists the cook during food service, etc. May be listed in the muster list and emergency instructions

- Mechanic
  Inspects, repairs and maintains equipment and machinery. Generally non-physically demanding work, some heavy lifting. Not listed in the muster list and emergency instructions

- ROV pilot
  Only task is to remote control mini submarines on the ocean floor. Requires high attentiveness and alertness. Not listed in the muster list and emergency instructions

- Fisherman
  Work on deck in connection with various fishing equipment. Cleaning and processing of catch. Physically demanding labour. Exposed to the weather elements. Normally not part of the navigational watch. May be listed in the muster list and emergency instructions

- Crane Operator (AB / Crane Operator)
  Responsible for operating all cranes onboard the vessel. Assume the role of vessel AB when not required for crane duties. Maintaining cranes according to planned maintenance systems and Chief Engineers requirements.

11 JOB POSITIONS ON MOBILE OFFSHORE UNITS

- Offshore Installation Manager / Platform Manager
  The senior administrative manager on board. Overall responsibility for operations, safety and emergency preparedness. Responsible for compliance with relevant rules and regulations

- Stability Section Leader
  Responsible for navigation, positioning and stability. Has responsibilities and tasks related to i.e. maintenance and cargo handling

- Control Room Operator
  Works closely with the stability section leader and is responsible for the operation and coordination of the systems in the control room. Forms part of shift schedule. Equivalent to Deck / Engineer Officer Class 4

- Technical Section Leader
  Equivalent to Engineer Officer Class 1

- Technical Assistant
  Equivalent to Engineer Officer Class 2

- Engine Room Operator
  Equivalent to Engineer Officer Class 4

12 TRADE AREAS

Reviewed 2020-03-03

The Trade Area Regulations relates to Norwegian coastal waters, not coastal waters elsewhere. By "near-coastal waters" means the North Sea and Baltic trade.

The Regulations of 4th November 1981 No 3793 concerning trade areas defines the different trade areas, divided in three groups:
1) Domestic voyages,
2) Foreign voyages and
3) Trade areas for fishing vessels of less than 15 m in overall length.

The following trade areas are defined in the below list. The list is not a complete description of the different trade areas. For the complete description, please visit the Regulations, which can be found here.

Trade Areas - Domestic Voyages		
Section 6	Trade on lakes and rivers	Trade on navigable Norwegian lakes and river
Section 7	Trade Area 1 –	Trade on Norwegian lakes and rivers, and inner parts of fjords and in other Norwegian waters where smooth waters can generally be expected. Annex I.
Section 8	Trade Area 2 –	Voyage in Norwegian waters which are protected against waves and wind from the open sea, including more restricted waters. Annex II.
Section 9	Trade Area 3 -	Voyage on the Norwegian coast where the stretches without protection against waves and wind from the open sea do not exceed 5 nautical miles, including more restricted waters. Annex III.
Section 10	Trade Area 4 -	Voyage in sheltered waters where the unsheltered stretches do not exceed 25 nautical miles. Annex IV
Section 11	Small coasting	Voyage on the Norwegian coast where the unsheltered stretches exceed 25 nautical miles, including all more restricted waters, but never farther off the coast than 20 nautical miles from the Base Line (ref. Regulation of 14 June 2002 No. 625 issued by the King).
Trade Areas – foreign voyages		
Section 13	Great Coasting	Voyages in small coasting as well as voyages in Swedish, Danish and German waters east of a line Lindesnes – the western entrance of Limfjord to a line Karlskrona – Swinoujscie.
Section 14	North Sea and Baltic trade (Near-coastal waters)	Voyages in small coasting as well as voyages in Skagerrak, Kattegat, the Baltic Sea including the Gulf of Bothnia and the Gulf of Finland, the North Sea south of latitude 61°N, and trade to Great Britain, Ireland east of longitude 8° W, and the English Channel limited by a line Brest – Cork.
Section 15	European trade	All trade within the following outer boundaries: the White Sea, Svalbard, Jan Mayen, Iceland, Madeira, the Azores, the Canary Islands, the west coast of Africa

		north of latitude 30° N, the Mediterranean and the Black Sea.
Section 16	Short international voyage	An international voyage (ref. section 17) where the ship does not proceed more than 200 nautical miles from a port or place where passengers and crew can be brought to safety, and where the distance between the last port of call in the country of embarkation and the final port of destination does not exceed 600 nautical miles.
Section 17	International voyage	A voyage from a country to which the International Convention for the Safety of Life at Sea, 1974 (SOLAS Convention) applies to a port outside such a country, or the converse of this; and in this connection any territory for whose international relations a Contracting Government is responsible, or for which the United Nations Organization is the administering authority, shall be regarded as a separate country.
Section 18	Overseas voyage	A voyage from one continent to another across one of the oceans
Section 19	Unrestricted voyages	Voyages with unrestricted trade areas.
Trade Areas – Fishing vessels of less than 15 m in overall length		
Section 21	Fjord fishing	Fishing and sealing/whaling in waters on the Norwegian coast where unsheltered stretches do not exceed 5 nautical miles (ref. Annex III), or unsheltered waters up to 3 nautical miles from harbours or other protected waters.
Section 22	In-shore fishing	Fishing and sealing/whaling within 12 nautical miles from the Base Line.
Section 23	Bank fishing I (Ground fishing I)	Fishing and sealing/whaling within the area bounded by the coordinates described in Section 23 of the Regulations – mainly along the Norwegian coast, and parts of Skagerrak and Kattegat.
Section 23	Bank fishing II (Ground fishing II)	Fishing and sealing/whaling within 200 nautical miles from the Base Line, and shelter and rest near Bear Island in the period from 1 May to 31 August within the area bounded by the co-ordinates described in Section 23 of the Regulations.
Section 24	Deepsea fishing I	Fishing and sealing/whaling within the area defined as bank fishing II, and also the North Sea, the Skagerrak, the Kattegat with adjacent waters, limited between 50° N – 62° N and 10° W.
Section 24	Deepsea fishing II	Fishing and sealing/whaling in all waters except waters with open/scattered drift ice concentration (4/10-6/10) or higher beyond 200 nautical miles from the Base Line.
Section 25	Fishing in ice-covered waters I	Fishing and sealing/whaling in all waters except waters with a heavy/very heavy drift ice concentration (8/10-9/10) or higher beyond 200 nautical miles from the Base Line.
Section 25	Fishing in ice-covered waters II	Fishing and sealing/whaling in all waters.

Because of their health condition, sometimes seafarers can only work safely in restricted waters, often labelled “Near-coastal waters”. In the Norwegian regulations is interpreted as North Sea and Baltic trade area. This does not, however, apply to sailing along the coast of countries outside the North Sea and the Baltic Sea. To restrict a seafarer to coastal waters anywhere else in the world, another approach must be used.

According to the Norwegian Regulations, other restrictions on trade area than those mentioned in the *Regulations of 4th November 1981 No 3793 concerning trade areas,* can only be set by the appellate body.

The person must then be made temporarily unfit by the seafarer’s doctor and be assisted to apply for an exemption to the appellate body, assuming the person wishes to apply for such an exemption.

In cases where the appellate body grant an exemption, they often describe the restriction as “**Within range of a helicopter with medical evacuation capacity”.**

This restriction does not, however, guarantee that the seafarer can be evacuated should they be in urgent need of medical assistance on shore. We are aware that even if a HELIVAC[2] capacity is formally available, for some practical reason it may not be available within reasonable time. In comparison, a seafarer working in near coastal waters outside Norway is not guaranteed that HELIVAC can be carried out, or that the ship can reach port in reasonable time, due to i.e. harsh weather conditions.
Even with its limited effect, the restriction “Within range of a helicopter with medical evacuation capacity” will suffice for most cases.

[2] HELIVAC = Helicopter Evacuation, or evacuation by means of a helicopter

13 SAFE MANNING AND SAFETY FUNCTION

13.1 SAFE MANNING LEVELS

Safe manning levels for a specific vessel or type of vessels are laid down by the Norwegian Maritime Authority in accordance with Regulations of 18 June 2009 No. 666 concerning the manning of Norwegian ships (hereinafter referred as the Manning Regulations).

"Safe manning levels" are defined in Manning Regulations Section 7:

"For each ship the Norwegian Maritime Authority shall determine the minimum safe manning including job specifications and qualification requirements etc. which are necessary to maintain the safety of the ship and those on board and prevent pollution of the marine environment."

In accordance with the Manning Regulations Section 8, the company shall propose a minimum safe manning level which is necessary to maintain the safety of the ship and those on board and prevent pollution of the marine environment. This proposal shall be based on:

a) Safety Management System
b) risk analysis
c) evacuation analysis, for ships for which such analysis is required
d) organization plan
e) job instructions for each post in the organization
f) the technical standard of the ship
g) propulsion machinery output
h) alternations
i) job combinations or/and overlapping competence
j) working hours arrangements to be applied in each case
k) number of passengers

The proposed safe manning shall cover all relevant operations, tasks and functions for the safe operation of the ship, including:

a) watchkeeping both at sea and in port, as well as safety and emergency response drills
b) operation and maintenance of vital operating systems, including propulsion machinery and rescue and emergency response systems
c) operation and maintenance of technical equipment on the bridge and in machinery spaces, as well as in other control rooms
d) operation and maintenance of internal and external communication equipment
e) maintenance of critical components
f) catering requirements of the crew, as well as required cleaning
g) anchoring and mooring, as well as making the ship ready for the voyage
h) maritime operations such as navigation, manoeuvring, stability, etc.
i) monitor the loading and unloading, securing and placement of cargo (dangerous cargo, etc.)
j) first aid, treatment of injuries, and medical assistance
k) safety training and other safety work, including the tasks specified in the Regulations of 22 June 2004 No. 972 on security anti-terrorism and anti-piracy measures and the use of force on board ships and mobile offshore drilling units
l) familiarization of new crew members
m) inspection of the intake of bunkers, supplies and provisions
n) other operations essential to safe manning

13.1.1 CAN A PERSON ON SICK-LEAVE BE A PART OF THE SAFETY MANNING?

The Manning Regulations do not prohibit that a person on partial sick leave can be a part of the minimum safety manning, although this will only be relevant in very special cases, where mitigating measures are established as appropriate.

Being a part of the minimum safety manning also implies being on emergency preparedness during rest hours. Following the Manning Regulations Section 11 it is not allowed for a ship to leave port if the minimum safety manning has shortcomings. A person on partial sick leave will not be able to form a part of the emergency preparedness while resting between working hours – as the person will not have enough working capacity to work regular hours and therefore cannot be assumed to have any additional working capacity for use after working hours. If the individual is not forming a part of the emergency preparedness, this is regarded a shortcoming in accordance with the Manning Regulations Section 11, and the ship will not be allowed to leave port.

Conclusion:

On this background, the NMA concludes that an individual on partial sick leave as a general rule cannot form a part of the minimum safety manning.

13.2 ADDITIONAL MANNING

In order to ensure safe manning, the company and master shall assess whether additional manning is necessary. Additional manning is the extra manning the company in agreement with the master considers necessary to have on board to carry out operations that cannot be handled by the minimum safe manning alone without compromising the safety of the ship and those on board.

Even if persons in the additional manning do not form a part of the minimum safe manning, they can have safety functions as a part of their duties.

13.3 SAFETY FUNCTION

Safety function means having tasks related to fire protection and extinguishing, evacuation and lifeboat manoeuvres, and involves that the person, e.g. must carry/move an injured or sick person up-/downstairs/ladders/through manholes, etc. during an evacuation. Having a safety function also includes that the person is on standby, i.e. that the person must be able to immediately perform the above-mentioned tasks. Having a safety function means being on the alert. The person is not assigned to the alert if the person is not fit for the safety function.

Safety functions are duties covered by Chapter VI in the STCW Code, Part A: “Standards regarding emergency, occupational safety, security, medical care and survival functions”.

If the job description/task description contains duties which are covered in one of the following Sections of Chapter VI of the STCW Code A, the person is regarded to “have a safety function”.

Individuals who do not belong to the minimum safe manning, still can have a safety function. All persons who belong to the minimum safety manning have safety functions.

A-VI/1-1	Survive at sea in the event of ship abandonment
A-VI/1-2	Minimize the risk of fire and maintain a state of readiness to respond to emergency situations involving fire Fight and extinguish fire
A-VI/1-3	Take immediate action upon encountering an accident or other medical emergency
A-VI/1-4	Comply with emergency procedures Take precautions to prevent pollution of the marine environment Observe safe working practices Contribute to effective communications on board ship Contribute to effective human relationships on board ship Understand and take necessary actions to control fatigue
A-VI/2-1	Take charge of a survival craft or rescue boat during and after launch Operate a survival craft engine Manage survivors and survival craft after abandoning ship

	Use locating devices, including communication and signalling apparatus and pyrotechnics Apply first aid to survivors
A-VI-2-2	Understand the construction, maintenance, repair and outfitting of fast rescue boats Take charge of the launching equipment and appliance as commonly fitted, during launching and recovery Take charge of a fast rescue boat as commonly fitted, during launching and recovery Take charge of a fast rescue boat after launching Operate a fast rescue boat engine
A-VI/3	Control fire-fighting operations aboard ships Organize and train fire parties Inspect and service fire-detection and fire-extinguishing systems and equipment Investigate and compile reports on incidents involving fire
A-VI/4-1	Apply immediate first aid in the event of accident or illness on board
A-VI/4-2	Provide medical care to the sick and injured while they remain on board Participate in coordinated schemes for medical assistance to ships
A-VI/5	Maintain and supervise the implementation of a ship security plan Assess security risk, threat and vulnerability Undertake regular inspection of the ship to ensure that appropriate security measures are implemented and maintained Ensure that security equipment and systems, if any, are properly operated, tested and calibrated Encourage security awareness and vigilance
A-VI/6-1	Contribute to the enhancement of maritime security through heightened awareness Recognition of security threats Understanding of the need for and methods of maintaining security awareness and vigilance
A-VI/6-2	Maintain the conditions set out in a ship security plan Recognition of security risks and threats Undertake regular security inspections of the ship Proper usage of security equipment and systems, if any

14 INFORMATION TO THE EMPLOYEE REGARDING THE DECISION

14.1 TEMPLATE FOR INFORMATION TO THE EMPLOYEE

Reviewed 2025-11-04

To ……..

MEDICAL EXAMINATION STATEMENT

I have conducted a medical examination today for the purpose of issuing a medical certificate in accordance with the Regulations of 5 June 2014 No. 805 concerning the medical examination of personnel serving on Norwegian ships and mobile offshore units (hereinafter referred as the Health Regulations).

DECISION

Pursuant to the Health Regulations, I have today reached a decision regarding the issuance of:

☐ **MEDICAL CERTIFICATE** in accordance with the Health Regulations Section 10
☐ **MEDICAL CERTIFICATE WITH LIMITATION** in accordance with the Health Regulations Section 11
Position: Restriction: ……..
Trade area: Restriction: ……..
Validity period: Limitation: ……

☐ **PERMANENT UNFITNESS** in accordance with the Health Regulations Section 12 first paragraph
☐ **PROVISIONAL UNFITNESS** in accordance with the Health Regulations Section 12 second paragraph
☐ **TEMPORARY UNFITNESS** in accordance with Health Regulations Section 12 third paragraph
……..

☐ I have decided to defer the implementation of this decision pursuant to Article 17 of the Regulations, pending consideration of your case by the appellate body. This deferment shall not exceed six months from today's date.

This decision is conditional upon the following:

1. You have submitted an appeal against my decision or applied for an exemption from the regulatory requirements.
2. The ☐ Company or ☐ Master has granted consent for you to continue working on board while your case is under review.

REASONS FOR DECISION

Your medical condition does not meet the requirements set out in the Health Regulations in the following area(s):

☐ Appendix A – Eyesight Requirements
☐ Appendix B – Hearing Requirements
☐ Appendix C – Physical Capability Requirements
☐ Appendix D – Use of Medication
☐ Appendix E – Health Requirements for Medical Conditions

Your condition:
……..

Further details regarding the grounds for this decision:
……
……

……
……

……
……

RIGHT OF APPEAL
You have the right to appeal this decision pursuant to the Health Regulations Section 15, cf. Section 28 of the Public Administration Act.

Appeals should be addressed to the Norwegian Maritime Authority and submitted via myself. I will then reconsider the decision. Should I uphold the original decision, the case will be forwarded to the Norwegian Maritime Authority for review by the appellate body.

Any new information relevant to your case should be included with the appeal or submitted separately.

The deadline for submitting an appeal is three weeks from the date on which you received this decision.

APPLICATION FOR EXEMPTION
You are entitled to apply for an exemption from the requirements of the Health Regulations, pursuant to the Health Regulations Section 16.

A exemption may be granted by the appellate body if:
a. It is established that the requirement is neither a minimum standard under binding international regulations nor essential, and the exemption is deemed justifiable in terms of safety, cf. the Health Regulations Section 1; or
b. It is established that the requirement is not a minimum standard under binding international regulations, and that compensatory measures will ensure an equivalent level of safety as required by the Health Regulations.

There is no deadline for submitting an application for exemption.

GUIDANCE

Should you require assistance in preparing an appeal or an application for exemption, or if you have any questions regarding the process, you are welcome to contact me.

Place…….. Date…….

Yours sincerely,
(sign.)
Full Name
Approved Seafarers' Doctor, Norwegian Maritime Authority

14.2 POSTPONED EXECUTION OF THE SEAFARER'S DECISION

Reviewed 2025-11-04

Pursuant to the Health Regulations Section 17, the seafarer's doctor may permit the individual to continue working on board—either in the same role or in a less demanding capacity—until the appeal or exemption application has been decided, provided that:

- The seafarer has lodged an appeal against the decision or submitted an application for exemption from the requirements of the Health Regulations;
- The company or master has provided the seafarer's doctor with written consent, using the prescribed form KS-0421 (as illustrated);
- The seafarer's doctor determines that postponing the execution of the decision does not contravene the provisions of the section.

Such permission may be granted for a period not exceeding six months and cannot be extended by a subsequent decision on postponed execution.

The seafarer's doctor must fill in a declaration of temporary unfitness, and a medical certificate for the period for which postponed execution is granted.

14.3 CONSENT TO POSTPONED EXECUTION OF THE SEAFARER'S DECISION

The below form *Consent to postponed execution of the seafarer's doctor's decision* is made for this purpose.

If a consent is given by the company/master, the form shall be enclosed with the appeal or application for exemption.

Please note that postponed execution may be granted for a maximum of 6 months. The permit cannot be extended with a new decision on postponed execution.

In cases where a postponed execution is relevant, the seafarer's doctor must fill in a declaration of temporary unfitness, and a medical certificate for the period for which postponed execution is granted.

Sjøfartsdirektoratet
Norwegian Maritime Authority

Consent to postponed execution of the seafarer's doctor's decision

in accordance with the Regulations of 5 June 2014 No. 805 on medical examination of employees on Norwegian ships and mobile offshore units

Person working on board / independent contractor (hereinafter referred to as "person")		
Name	Date of birth	Position on board

Company	Vessel / mobile offshore unit	Master

The medical condition of the person calls for a: ☐**limited medical certificate** ☐**declaration of temporary unfit** ☐**declaration of permanent unfit**

The person hereby ☐**appeals the seafarer's doctor's decision** ☐ **applies for an exemption from the health requirements**.

In the case of appeal or application for exemption, the seafarer's doctor may permit the person to continue in the same or a less demanding capacity on board until the appeal or application is decided by the appellate body for health cases. This provides that the company or master gives a written consent. The master / company is therefore requested to consider providing a written consent to postponed execution of the seafarer's doctor's decision.

The person is <u>not</u> obliged to, but may inform the company / master of the medical condition.
The person hereby ☐**consents** ☐ **declines** the company information of the medical condition.

Provided that the consent is given, the seafarer's doctor informs as follows:

Medical condition	

The seafarer's doctor's risk assessment:

Risk assessment	Likelihood			
The person will	Very low (<2%)	Low (2-5%)	Moderate (5-10%)	High (> 10%)
not accomplish the job tasks	☐	☐	☐	☐
lose the ability to work or have a sudden reduced work ability	☐	☐	☐	☐
need a medical treatment on board	☐	☐	☐	☐
need a medical treatment on shore	☐	☐	☐	☐

Signed seafarer's doctor states that postponed execution of the decision will not be in contravention of section 1 in the Regulations. The postponed execution of decision grants until (date) _____, upon the decision of the appellate body for health cases.

Date	Signature of the person	Signature of the seafarer's doctor

Based on the seafarer's doctor's risk assessment, the company / the master ☐**consents** ☐ **declines** the person to continue in the same or less demanding capacity on board until the appeal or application is decided by the appellate body of health cases.

Comments of the company / master:	

Date	Signature of the company / master

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15 SAMPLE OF ONLINE MEDICAL CERTIFICATE

Sjøfartsdirektoratet
Norwegian Maritime Authority

HELSEERKLÆRING
MEDICAL CERTIFICATE

Denne helseerklæring er utstedt med hjemmel i lov av 16. februar 2007 nr. 9 om skipssikkerhet, § 17, og tilfredsstiller de krav som følger av ILO-konvensjon nr. 186 om sjøfolks arbeids-og levevilkår (MLC) og STCW-konvensjonen. Denne helseerklæring skal tas med til sjøfartslegen ved neste helseundersøkelse.
This medical certificate is issued in accordance with section 17 of the Act of 16 February 2007 No. 9 relating to ship safety and security (Ship Safety and Security Act), and meets the requirements set out in the Maritime Labour Convention (MLC) and the STCW Convention. This medical certificate shall be presented to the seafarer's doctor at the next medical examination.

Etternavn *Last Name*	For- og mellomnavn *First and Middle Name*	Fødselsdato *Date of Birth*	Kjønn *Gender*	Nasjonalitet *Nationality*
Nordmann	Ola	17.05.1996	Mann/Male	NO

Identitetsdokumenter kontrollert ved undersøkelsen? *Identification documents checked at the point of examination?*		Ja/Yes
Hørsel møter kravene i STCW-konvensjonen avsnitt A-I/9? *Hearing meets the standards in Section A-I/9 of STCW Code?*		Ja/Yes
Hørsel tilfredsstillende uten hjelpemidler? *Unaided hearing satisfactory?*		Ja/Yes
Synet møter kravene i STCW-konvensjonen avsnitt A-I/9? *Visual acuity meets standards in Section A-I/9 of STCW Code?*		Ja/Yes
Bruker visuelt hjelpemiddel (briller/linser)? *Uses visual aid (glasses/contact lenses)?*		Ja/Yes
Fargesyn møter kravene i STCW-konvensjonen avsnitt A-I/9? *Colour vision meets standards in Section A-I/9 of STCW Code?*	Undersøkt/*Tested* 07.05.2026	Ja/Yes
Skikket for utkikk? *Fit for lookout duties?*		Ja/Yes
Skikket til sikkerhetsfunksjon? *Fit for safety function?*		Nei/No
Skikket til tjeneste uten begrensinger *Fit for service without limitations or restrictions*		Ja/Yes

SAMPLE

Arbeidstakeren er fri for sykdom som kan antas å bli forverret ved tjeneste om bord, eller som vil gjøre vedkommende uegnet til slik tjeneste eller sette helsen til andre personer om bord i fare.
The seafarer is free from any medical condition likely to be aggravated by service at sea or to render the seafarer unfit for such service or to endanger the health of other persons on board.

Dato for helseundersøkelse *Date of Medical Examination*	Utstedelsesdato *Date of Issue*	Utløpsdato *Date of Expiry*	Helseerklæringsnummer *Certificate number*
07.05.2026	07.05.2026	07.05.2028	dn84-0cgj-52xe-6qao

To verify the validity of this document, scan the QR code or visit verify.sdir.no

Sjøfartslegens signatur *Seafarer's Doctor's Signature*	Sjøfartslegens stempel *Seafarer's Doctor's Official Stamp*	Arbeidstakerens signatur *Seafarer's Signature*

16 MEDICAL SELECTION AND THE SEAFARERS' DOCTOR

16.1 DIFFERENT ROLES

Reviewed 2025-11-04

Serving as an approved seafarer's doctor involves determining whether individuals satisfy the health requirements specified in the Health Regulations.

This function is fundamentally different from that of a treating clinician, a municipal medical officer responsible for preventive public health, a company doctor providing occupational health services, or a medical assessor determining eligibility for benefits on behalf of the Norwegian Labour and Welfare Administration (NAV) or an insurance provider.

The distinction is illustrated in the figure below.

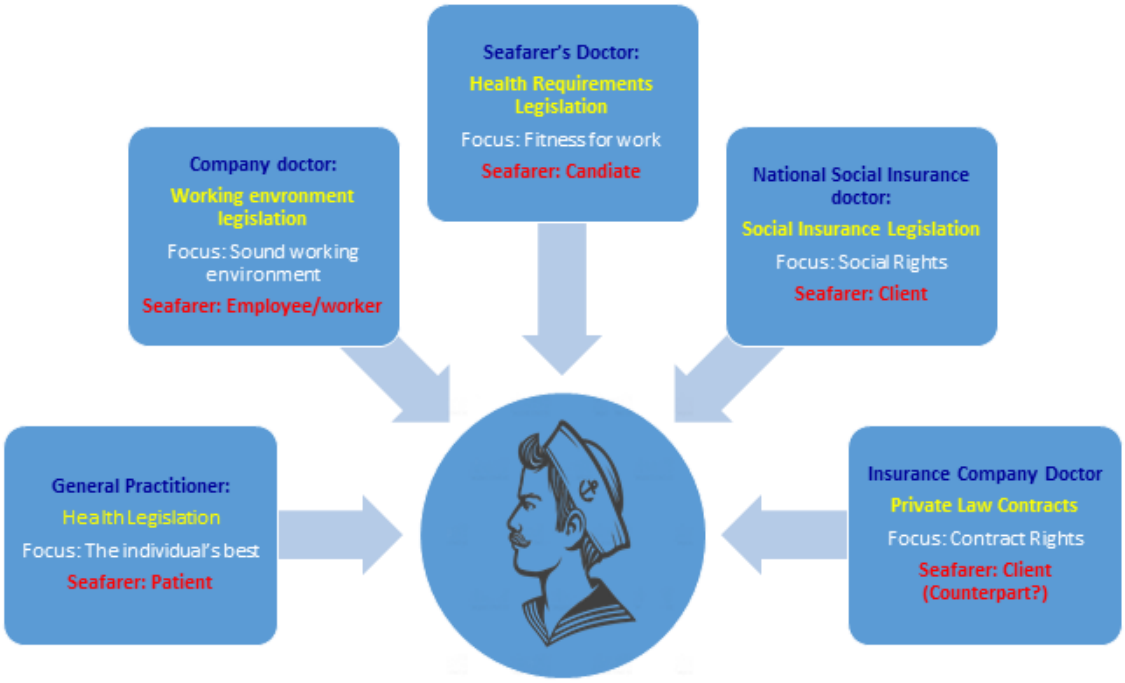


Illustration: Different roles of doctor and the individual seafarer seeing them

An individual attending a medical consultation may be perceived differently depending on the context:

- As a patient by a general practitioner
- As a worker by a company doctor
- As a candidate subject to selection criteria by a seafarer's doctor
- As a client entitled to certain rights by the Norwegian Labour and Welfare Administration (NAV)
- As a customer—or, in some cases, an opposing party—by an insurance company

In many situations, particularly in sparsely populated areas, a doctor may hold several of these roles concurrently. It is therefore essential that the doctor remains fully aware of the role they are performing at any given time and communicates this clearly to the individual, ensuring that the person understands the purpose and nature of the medical assessment being undertaken.

Expressed differently in terms of risk assessment:

- The general practitioner evaluates the risk the patient may pose to themselves
- The company doctor assesses how the working environment may affect the employee's health
- The seafarer's doctor considers how the individual may pose a risk to the working environment and to others on board, in addition to determining their fitness for duty

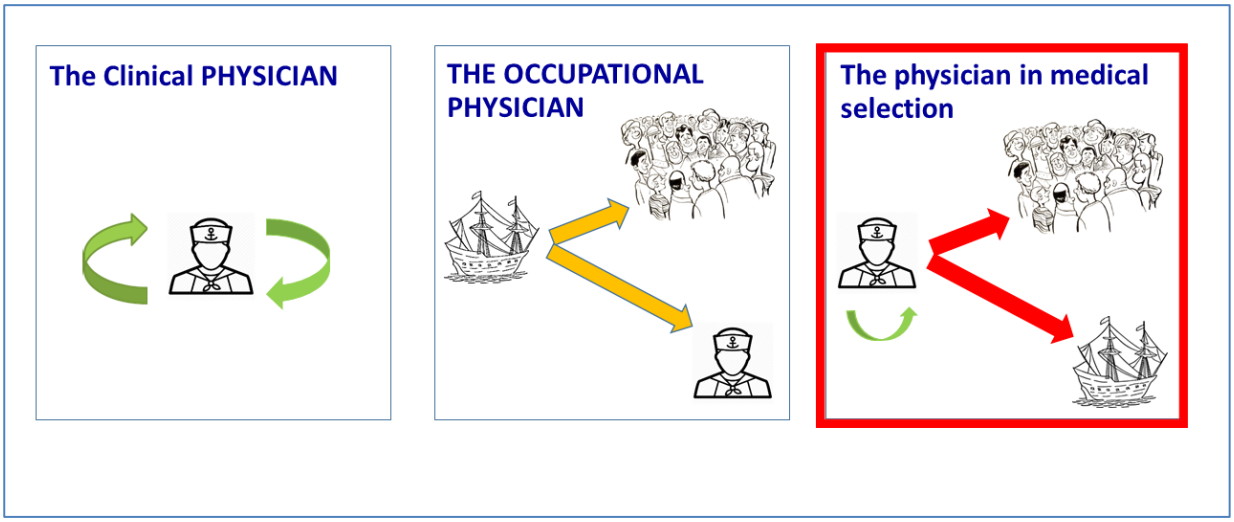


Illustration Different perspectives of doctors, depending on role

16.2 BOUNDARIES BETWEEN MEDICAL ROLES

Reviewed 2025-11-04

Different legislative frameworks govern different medical roles. While the professional conduct of a seafarer's doctor is regulated by the Health Personnel Act, the nature of the work performed may fall under additional statutory provisions.

Specifically, the practice of a seafarer's doctor is governed by the Ship Safety and Security Act, the Ship Labour Act, and the Public Administration Act. Individual decisions are made pursuant to the PAA and are issued on behalf of the Norwegian Maritime Authority. Such decisions may affect an individual's rights—for example, by restricting the permitted trade area, limiting onboard capacity, or reducing the validity period of a medical certificate.

The Norwegian Maritime Authority administers the relevant Regulations and oversees the conduct of seafarer's doctors to ensure compliance.

The Norwegian Working Environment Act does not apply to vessels; however, company doctors operating onshore practise under this Act. Their work is supervised by the Norwegian Labour Inspection Authority.
General practitioners practise under the Health Care Act, which is administered by the Norwegian Directorate of Health. Oversight of their professional conduct is carried out by the Norwegian Board of Health Supervision.

	Seafarer's Doctor	Company Doctor	General Practitioner
Role	Verification	Prevention	Treatment
Focus	(Fitness for work) / Absence of disease	Working environment / occupational injuries and diseases	Individual health
Prespective	Maximum two years ahead	Past, present and future	(past) present and future
Tools	Medical selection in relation to requirements	Environmental factors affecting the worker	Medical treatment of illness and injuries
Aim	Contribution to the safety of the working environment	Prevention of occupational injuries and diseases	Prevention and treatment of disease regardless of cause
Acts	Ship Safety Act	Working Environment Act	Health and Care Act
The individual	A Candidate (for getting a medical certificate)	An employee/worker	A Patient

16.3 POSITIVE VS. NEGATIVE SELECTION

Reviewed 2025-11-04

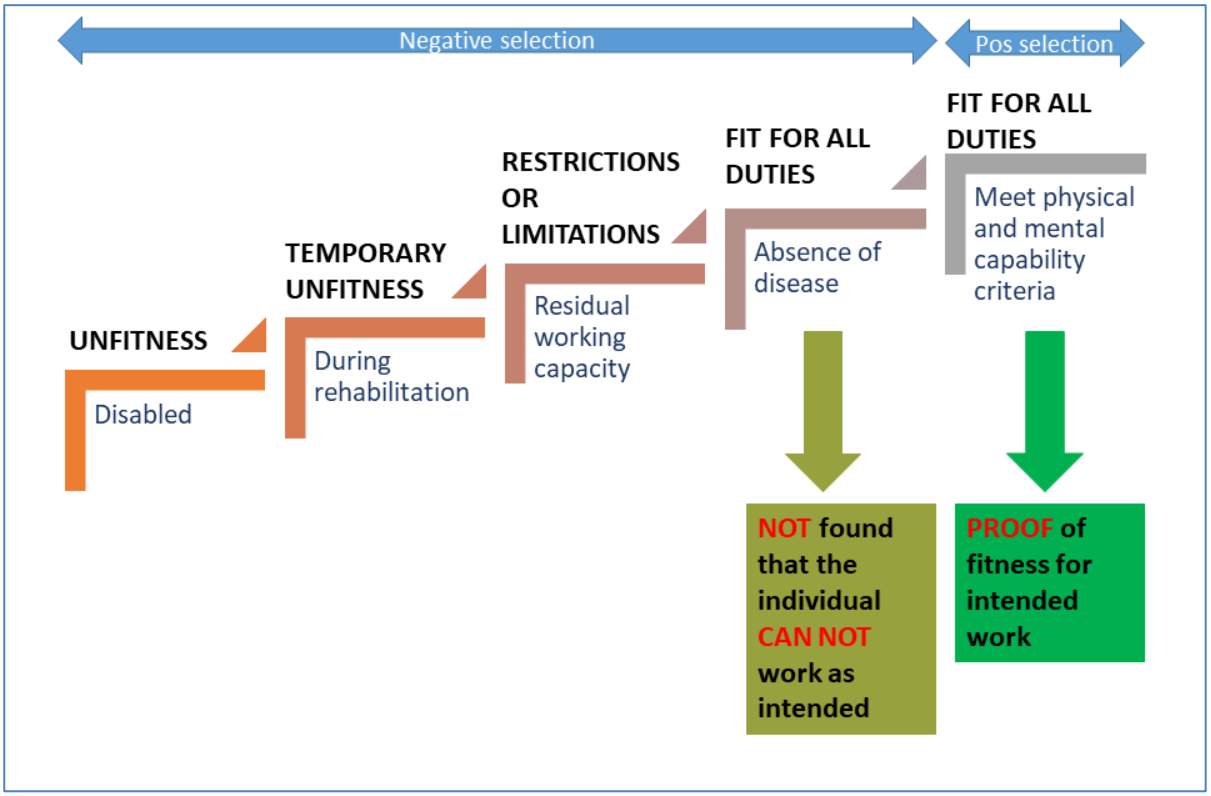
Selection medicine refers to the branch of medical practice concerned with evaluating individuals against defined medical criteria for the purpose of selection.

In principle, there are two distinct approaches to selection: so-called **positive selection** and **negative selection.**

	Positive selection	Negative selection
Method	Inclusion of people considered fit based on established performance	Exclusion of people based on established dysfunction
Starting point	All people are considered unfit, and you select the fit people based on the criteria	All people are considered fit, and you select the unfit people based on the criteria
Criteria	Performance requirements	Medical criteria
Keywords	«Unfit until proven fit»	«Fit if not proven unfit»

The seafarer's medical examination is primarily concerned with negative selection—that is, identifying individuals who do not meet the required health standards. However, positive selection may also be applied in certain cases, for example, when there is reason to believe that physical performance requirements may not be met, such as in instances of significant overweight.

Stated differently:



Positive and negative selection

16.4 THE PURPOSE OF THE MEDICAL EXAMINATION

Reviewed 2025-11-04

The purpose of a medical examination conducted by a general practitioner is to provide treatment for the individual, with the primary aim of promoting their personal health and wellbeing.

A company doctor, by contrast, conducts medical assessments to identify potential health risks in the workplace. This enables the implementation of appropriate measures to prevent work-related illness and injury — both for the individual being examined and for others in the working environment.

The objective of a medical examination carried out by a seafarer's doctor is to determine whether the individual is medically fit to safely perform both routine and emergency duties at sea, is not affected by any condition likely to be aggravated by service on board and does not pose a risk to the health and safety of others or to the safe operation of the vessel.

It is essential that the seafarer's doctor is fully aware of the perspective required in this role and communicates it clearly when assessing the individual's health.

16.5 LIST OF DISEASES AND CONDITIONS - APPENDIX E

Reviewed 2025-11-04

The list of medical conditions referenced in the Regulations is not exhaustive. It is estimated that there are currently close to 30,000 recognised medical diagnoses, making it impractical to compile a comprehensive list.

Accordingly, when a seafarer's doctor encounters a condition not explicitly included in the list of diseases and conditions, the list should be used as a reference in conjunction with a professional assessment of the condition in light of the objectives clause set out in Section 1 of the Regulations.

In other words, the absence of a condition from the list should not automatically result in the issuance of a medical certificate. If the condition is deemed incompatible with the safe performance of duties, or if it poses a risk to the safe operation of the vessel or to the health and safety of others on board, the doctor should consider imposing a limitation on the certificate or declaring the individual unfit for service.

All conditions are classified according to ICD-10, in accordance with the final provision of Appendix E.

In addition to the guidance provided in the list of conditions, it may be helpful to consult the Handbook for Medical Examiners—a guide to the IMO/ILO Guidelines on the Medical Examination of Seafarers, published by the Norwegian Centre for Maritime and Diving Medicine in collaboration with the International Maritime Health Association: http://handbook.ncmm.no.

17 RISK ASSESSMENT

Reviewed 2025-11-04

Risk assessment in this context is a step-by-step process. The method is outlined below and serves as a guiding principle for clinical reasoning. However, it is important to note that the steps should not be followed rigidly in every case.

Some cases are straightforward and allow for prompt decision-making. Others are more complex and demand a more comprehensive and nuanced evaluation.

17.1 FIRST STEP: IDENTIFICATION OF THE TYPE OF INCIDENT WHICH MAY OCCUR WITH REGARD TO THE UNDERLYING CONDITION(S)

Reviewed 2025-11-04

When the underlying medical condition is known, the next step is to identify any potential incidents that may arise in relation to safety. These may include an increased risk of syncope, myocardial infarction, seizures, thrombosis, haemorrhage, paralysis, psychotic episodes, depression, anxiety, and similar events.

The critical consideration in this assessment is whether the condition may result in a loss of either physical or mental/cognitive function.

Loss of physical function may manifest as, for example, reduced muscle strength, slowed movement, impaired coordination, or compromised balance.

Loss of mental or cognitive function may present as, for instance, impaired memory, reduced vigilance or alertness, delayed reaction time, diminished concentration, poor prioritisation, distorted perception of reality, reduced situational awareness, depressive or manic episodes, hallucinations, impaired simultaneous processing, or loss of mental overview.

Any such impairment may pose a risk to the individual seafarer, to fellow crew members, or to the safe operation of the vessel.

17.2 SECOND STEP: GENERAL ASSESSMENT OF THE LIKELIHOOD OF SUCH AN INCIDENT OCCURRING

Reviewed 2025-11-04

Based on knowledge of the underlying medical condition, the likelihood of an adverse incident occurring within the relevant time frame—defined as a maximum of two years—may be assessed for the diagnostic group to which the individual belongs.

However, evidence in this area is limited. Relevant information may be found in selected areas of the scientific literature, particularly in general review articles. Useful search terms include: course of illness, prognosis, complications, treatment, adverse effects, and follow-up.

Even when such data are available, they may not be directly applicable to the individual in question. The person may fall within a subgroup with an exceptionally favourable or unfavourable prognosis and may not reflect the average risk profile of the diagnostic group.

Where available, background information is provided in the list of medical conditions included in this guide. This section is expected to expand over time, and the seafarer's doctor should always refer to the most recent edition of the guidance.

17.3 THIRD STEP: INDIVIDUAL ASSESSMENT OF THE LIKELIHOOD

Reviewed 2025-11-04

Building on the general assessment of likelihood and incorporating knowledge of the individual candidate, the estimated risk may be adjusted based on a range of factors. These include age, gender, overall health status, co-morbidities, severity and stage of illness, duration of illness, length of observation, treatment efficacy, follow-up arrangements, and the broader contextual framework.

This step in the process is particularly demanding and requires professional experience and the careful exercise of clinical judgement in accordance with best practice.

17.4 FOURTH STEP: CONSEQUENCES FOR THE WORK SITUATION

Reviewed 2025-11-04

This step involves not only the medical implications of an underlying condition, but also any safety-related consequences it may have for the work environment. It is therefore essential that the seafarer's duties and working conditions are clearly understood.

The designation of position must not be recorded on the new medical certificates. However, if the seafarer's doctor determines that the individual may only serve in a specific capacity—or that there are particular roles within categories such as navigational watch, safety functions, or others in which the individual cannot serve—this must be noted on the certificate as a limitation.

Key considerations include:
What is the seafarer's position or capacity?
What are his or her specific duties?
What is the condition of the working environment?
Are there others with similar responsibilities who could assume the role if necessary?
How critical is the time factor? Would an incident have immediate consequences?

The next step is to evaluate the potential outcomes should an incident occur, both for the individual and for others on board, as well as for the vessel itself. Examples may include:

- Falling from a mast, down stairs, over guard rails, or overboard
- Injury caused by hazardous machinery or tools
- Self-harm in cases of severe psychiatric illness
- Illness not treated in time
- Fatality
- Injury to others resulting from errors or misjudgements overexertion of others in the event of loss of function
- Damage to material assets resulting from errors or misjudgements
- Operational disruption or harm caused by incorrect actions or decisions

Situations involving both routine duties and emergency responsibilities should be taken into account. The consequences may vary significantly between these two contexts, and each must be assessed accordingly.

17.5 FIFTH STEP: ESTIMATION OF THE UNMITIGATED RISK

Reviewed 2025-11-04

At this stage, the unmitigated risk can be estimated. Risk is defined as the product of likelihood and consequence. In this context, consequence refers specifically to the impact on the work situation, rather than the immediate medical effects of the underlying condition (e.g. syncope resulting from cardiac arrhythmia).

Likelihood	Consequences		
	Less significant	Significant	Serious
Very Low (< 2% per year)	**Acceptable risk**	**Acceptable risk**	**Acceptable risk if mitigated**
Low (2-5% per year)	**Acceptable risk**	**Acceptable risk if mitigated**	**Acceptable risk if mitigated**
Moderate (5-10% per year)	**Acceptable risk if mitigated**	**Acceptable risk if mitigated**	**Unacceptable risk**
High (>10% per year)	**Acceptable risk if mitigated**	**Unacceptable risk**	**Unacceptable risk**

There are no established maximum thresholds for acceptable risk expressed in percentage terms. Acceptability will depend on the nature of the role and the specific duties involved.

For example, the risk associated with being the sole navigator on a high-speed passenger craft operating along the Norwegian coast is significantly greater than that of serving as third mate on a supertanker operating on autopilot in the Pacific Ocean. Similarly, operating a ferry with frequent port calls — such as twice per hour — entails higher risk than calling at a port once every 14 days. Being the only engineer on board presents greater risk than serving as part of a team, and roles such as module handling operator or crane operator carry higher safety-critical responsibilities than many other capacities.

17.6 SIXTH STEP: MITIGATING (RISK-REDUCING) MEASURES

Reviewed 2025-11-04

In certain cases, it may be appropriate to impose conditions — either in the form of limitations or specific orders — that serve to mitigate safety risks.

Limitations may relate to trade area, onboard capacity, or the validity period of the medical certificate. Orders may include requirements such as the use of corrective aids (e.g. glasses, hearing aids, or medication), mandatory follow-up with a seafarer's doctor, specialist, or general practitioner at specified intervals, the obligation to inform the captain and the company of any changes in medical status, the requirement for re-examination within a defined timeframe, or the duty to report back to the seafarer's doctor in the event of deterioration of the condition.

In some instances, such mitigating measures may render it justifiable for an individual to serve at sea who, in the absence of these safeguards, would have posed an unacceptable safety risk.

17.7 SEVENTH STEP: RISK EVALUATION OF THE MITIGATED RISK - CONCLUSION

Reviewed 2025-11-04

Once the unmitigated risk has been assessed — and, where applicable, the potential for mitigating measures to reduce the safety risk has been evaluated — it is time to determine the final, mitigated risk level and assess the outcome in light of the applicable legal framework.

Is the seafarer within the safety standards set out in the Regulations? Would the individual meet these standards if mitigating measures were implemented?

When the seafarer's doctor has carefully considered all the preceding steps, they are ready to reach a conclusion and make a decision.

Decisions to issue a medical certificate, a limited certificate, or a permanent, temporary, or provisional declaration of unfitness are individual decisions made pursuant to the Public Administration Act. It is therefore essential — and an obligation — that the seafarer's doctor clearly states the basis for the decision.

Both medical and legal grounds must be provided—namely, the safety risk assessment and reference to the relevant provisions of the Regulations or their appendices. This ensures that the seafarer understands the decision, the rationale behind it, and the available avenues for appeal or application for exemption.

17.8 POSTPONED EXECUTION OF DECISION

Reviewed 2025-11-04

Pursuant to the Health Regulations Section 17, the seafarer's doctor may permit the individual to continue working on board—either in the same role or in a less demanding capacity—until the appeal or exemption application has been decided, provided that:

- • The seafarer has lodged an appeal against the decision or submitted an application for exemption from the requirements of the Health Regulations;
-
- • The company or master has provided the seafarer's doctor with written consent, using the prescribed form KS-0421 (as illustrated);
- • The seafarer's doctor determines that postponing the execution of the decision does not contravene the provisions of the section.
-

Such permission may be granted for a period not exceeding six months and cannot be extended by a subsequent decision on postponed execution.

17.9 APPEALS AND APPLICATIONS FOR EXEMPTIONS

Reviewed 2025-11-04

The appellate body for health cases consists of a chairperson who is a qualified medical practitioner, a representative from the Norwegian Maritime Authority, and a representative from one of the three trade unions: the Norwegian Maritime Officers' Association, the Norwegian Union of Marine Engineers, or the Norwegian Seafarers' Union. The trade union representative is selected based on the occupational category of the applicant or complainant.

The authority and scope of the appellate body are defined in the Health Regulations Sections 13 and 14.

17.10 PREPARATION OF CASES FOR THE APPELLATE BODY

Reviewed 2025-11-04

The case shall only be referred to the appellate body when the seafarer wishes to appeal the seafarer's doctor's decision or apply for exemption for one or more health requirements. Furthermore, the case shall not be submitted to the appellate body for a general evaluation of the seafarer's health status or diagnosis.

Documentation and preparation of cases for the appellate body should be comprehensive when exemptions or special conditions are sought.

The appellate body reviews cases in writing, based on the documentation submitted. The seafarer's doctor is responsible for preparing the case and ensuring that it is clarified as thoroughly as possible prior to submission, in accordance with the Public Administration Act Section 17.

Cases that are inadequately prepared will be returned with a request for complete or partial revision, pursuant to the Public Administration Act Section 35. In practice, this almost invariably leads to significant delays in case processing. It is therefore essential that the seafarer's doctor recognises their responsibility and prepares the case with due diligence.

During case preparation, it is important to bear in mind that the appellate body will assess the matter independently. The seafarer's doctor must therefore present the basis for the decision in a manner that provides the appellate body with a clear and sufficient overview. The doctor's conclusions and grounds must be verifiable.

The appellate body acts as the appeal authority under the Public Administration Act and is empowered to examine all aspects of the case — both administrative and medical.

In exemption cases, the appellate body will not grant exemptions from the objects clause of the Health Regulations or from the medical requirements established by international minimum standards, such as those set out in the STCW Code, Part A.

In such cases, the appellate body will independently assess whether the individual — despite not meeting the criteria outlined in the appendices — may nonetheless be found, upon individual evaluation, to satisfy the objects clause of the Health Regulations. If the objects clause or the international medical standards under the STCW Convention are not met, an exemption will not be granted.

17.11 OBTAINING SPECIALIST STATEMENTS – THE SEAFARER'S DOCTOR'S REFERRAL COMPETENCE

Reviewed 2025-11-04

Obtaining specialist statements requires a few simple but deliberate actions to ensure a meaningful and relevant response.

Gathering such information forms part of the seafarer's doctor's duty as a subordinate authority under of the Public Administration Act Section 17, with the aim of clarifying the case as thoroughly as possible prior to any decision.

Hospital specialists from various fields cannot be expected to be familiar with the Health Regulations governing the medical examination of personnel serving on Norwegian ships and mobile offshore units, nor with the associated health requirements, the realities of working at sea, watchkeeping responsibilities, safety functions, and similar operational demands. Yet, such knowledge is essential in assessing whether a medical certificate may be issued.

Moreover, the specialist may not be acquainted with the principles of medical selection and may be unaware that the purpose of the Health Regulations is to safeguard the ship and crew, and to ensure that the individual is fit to perform their duties — not to facilitate rehabilitation, treatment, or the individual's personal preferences.

Standard medical reports are often of limited value. They typically describe the hospital admission, discharge status, follow-up arrangements, and referral timelines. Rarely do they address the likelihood of acute illness within a two-year period, the consequences for the individual, the ship, or the crew should an incident occur, and almost never do they contain any form of risk analysis.

Therefore, if the seafarer's doctor is to obtain the necessary information to clarify the case for the appellate body, specific and targeted questions must be asked. These questions should be tailored to the individual's situation, diagnosis, onboard duties, and, where relevant, the type of vessel, trade area, follow-up needs, and potential consequences of an incident.

Some general guidance may be useful:

- What is the likelihood of the individual becoming acutely unfit for duty during the certificate period?
- What types of incidents may occur?
- What would be the consequences if the individual cannot be evacuated to a hospital?
- If the individual is using medication:
- What is their functional level without medication (e.g. if medication is lost)?
- What is their functional level with medication?
- Are there adverse effects associated with the medication? If so, which?
- What would happen in the event of sudden cessation of treatment?
- Regarding follow-up and monitoring:
- Is regular medical follow-up required within a specific interval?
- Where can or must such follow-up be conducted?

The following questions are typically for the approved doctor to assess, but in some cases, the specialist may be able to provide relevant input:

- Is the individual sufficiently capable of performing both routine and emergency duties?

Ideally, the seafarer's doctor should attach a job description. Alternatively, the individual may describe their own duties.

As a minimum, the position or type of role should be specified.
Information about the vessel type, crew composition, and trade area is also highly relevant.

- Given the individual's condition, what is their level of functioning in relation to safety-critical tasks?
- For example: concentration, attention, prioritisation, cooperation, responsiveness, motor function, balance, vision, hearing, etc.

17.12 OBTAINING INFORMATION ON THE PERSON'S WORKPLACE BEFORE A CASE IS SENT TO THE APPELLATE BODY

Risk assessment pursuant to the Health Regulations is equally based on an assessment of the workplace and the health condition.

For the appellate body to be able to make the best decisions possible, it is important for them to have a good description of the workplace, as well as information about the employee's health condition. There is a wide range of ships and tasks on board. Crew sizes vary, as do trade areas and sailing routes. Companies and ships have different scopes of action for introducing risk-reducing measures. This is in part due to financial and operational limitations but also understanding and ability to deal with risk. These are all conditions affecting the overall risk picture and important information for the decision of the appellate body. It is the experience of the appellate body that information attached regarding the employee's health condition is usually adequate. There is, however, often not enough information about the workplace. Therefore, it is recommended that the seafarer's doctor obtains a workplace description and assessment of work capacity.

Information about the workplace can be obtained in different ways, and each way can provide different information. Together they form a good overall picture.

1. Description of tasks
2. Self-assessment of work capacity.
3. Employer's assessment of work capacity.
4. Risk assessment by employee and employer together.

The Health Regulations do not require the involvement of the employer. Even if the employee is not required to provide the employer with health information, it is still desirable that the workplace is well described, and that information from the employer is attached provided the employee agrees. The reason for this is that we want issues to be well considered so as to make the best and most sensible decisions possible.

We understand that many employees are reluctant to involve their employers in issues related to own health or loss of capacity. Experience has shown that talking to employers about capacity is usually beneficial for the employee. Such dialogue allows for the introduction of risk-reducing measures and facilitation of the work situation. These cases are based on health requirements not being met due to loss of health or capacity, and the decision of the seafarer's doctor has been a declaration of unfitness or limitation(s) in the medical certificate. In most cases, having a clear and open dialogue will contribute to reaching a common understanding and form the basis for better decisions in individual cases if the information is forwarded to the appellate body.

The role of the seafarer's doctor is to offer advice and information to help the employee understand the value of providing the employer with sufficient details. The seafarer's doctor should try to avoid a direct dialogue with the employer. The doctor may, with the informed consent from the seafarer, provide the employer with information on potential health issues which the employee may share with the employer as a basis for the risk assessment they will carry out together.

17.12.1 RISK ASSESSMENT CARRIED OUT BY EMPLOYEE AND EMPLOYER TOGETHER

Ideally, the employee and the employer should carry out a risk assessment together and submit it as well as the case documents to the appellate body. This type of risk assessment implies openness regarding loss of capacity to work, any knowledge of health incidents that may arise due to the condition, and that may affect the work capacity of the employee. Examples are sudden loss of consciousness, reduced physical performance, a need to rest, lack of concentration, need for medical care on shore, need for medication and technical aids, pain problems, etc.

A workplace risk assessment will include a systematic evaluation of all work operations performed by the employee, including safety functions. A risk assessment is conducted for each work operation in order to identify what consequences any relevant loss of capability would have for the safe operation and for the others on board. Subsequently, risk-reducing measures should be identified. The next step is to determine whether it is possible to implement these measures temporarily or permanently at the workplace. If a measure has already been tested or implemented, an evaluation of the measure should be found in the risk assessment.

The introduction of risk-reducing measures involves some kind of facilitation. Sometimes, small measures are enough to reduce a risk. At other times, there is a need for more far-reaching measures that could have greater consequences for the operations and the others on board. All vessels have different scopes of action, and the facilitation for one crew member must not compromise the overall safety on board. These issues should be evaluated and described in the risk assessment.

17.12.2 FACILITATION OF THE APPELLATE BODY'S CONSIDERATIONS

Including valuable and relevant information about the workplace in the application will facilitate the appellate body's assessment of the safety-related consequences of any medical incident, as well as their assessment of risk-reducing measures. Everyone involved wants the decisions of the appellate body to be as good as possible, and details about the workplace are key to good decisions. Furthermore, useful information about the workplace will be important to the seafarer's doctor who will make his own risk assessments.

17.13 DOCUMENTS TO BE ATTACHED TO AN APPEAL OR APPLICATION FOR EXEMPTION SUBMITTED TO THE APPELLATE BODY

Reviewed 2025-11-04

The following documents should be attached

a) All cases:
   a. The person's appeal/application for exemption
   b. Copy of the seafarer's doctor's written decision including the basis for the decision, which is being appealed, or which shows the seafarer's doctor's decision in exemption cases
   c. Copy of declaration(s) of unfitness or limited medical certificate(s)
   d. Copy of specialist statements, medical reports and other medical information relevant to the case
   e. Other information that could clarify the case, if any

b) Appeals:
   a. The seafarer's doctor's assessment which is given as grounds for the decision following receipt of appeal, and report/proposal to the appellate body

c) In case of postponed execution (only applicable to exemption cases):
   a. Copy of the form KS-0421 regarding consent to postponed execution
   b. Copy of the medical certificate

17.14 CHECK LIST FOR LAYOUT OF APPLICATION FOR EXEMPTION OR APPEAL TO THE APPELLATE BODY

Reviewed 2025-11-04

The following check list can be used when submitting documentation to the appellate body.

Have you remembered all the documents? Have you remembered to comment on all the points mentioned in your own letter?

1. What is the enquiry related to, an appeal or application for exemption?
2. Application/appeal form/letter signed by the individual themselves
3. Information about the individual:
   3.1. Last, first and middle name
   3.2. Date of birth and, if possible, national identity number
4. **Position** on board
   4.1.1. Which position
   4.1.2. What are the duties
   4.1.3. Safety function YES/NO
      4.1.3.1. Which function
      4.1.3.2. What are the duties

5. Company

5.1. Name of company

5.2. Address, post code and city

6. Ship

6.1. Name of ship

6.2. Type of ship

6.3. Manning of the workplace concerned

7. Trade area

8. Seafarer's doctor

8.1. Name and address

8.2. Land line telephone

8.3. Mobile phone

8.4. E-mail address

9. Decision

9.1. Declaration(s) in question

9.2. Grounds for the seafarer's doctor's decision

9.2.1. Legal basis

9.2.2. Medical basis for the assessment

9.3. Assessment of safety risk

9.4. Recommendation to the appellate body with grounds

9.5. The seafarer's doctor's reconsideration before transfer to the appellate body with proposal

9.6. Attachments (medical reports etc.)

17.15 SUBMISSION OF APPEAL AND APPLICATION FOR EXEMPTION

The approved seafarer's doctor encloses all relevant documents, cf. chapter 11.15, and send the case to the NMA. The NMA will forward the case to the appellate body for health cases for consideration.

17.15.1 SUBMISSION FROM SEAFARER'S DOCTORS OUTSIDE OF NORWAY

The approved seafarer's doctor encloses all relevant documents, cf. chapter 11.15, and send the case to the NMA. The NMA will forward the case to the appellate body for consideration.

17.15.2 SUBMISSION OF DOCUMENTATION BY SEAFARER'S DOCTORS OUTSIDE OF NORWAY

In cases where ordinary postal services will significantly delay cases being sent to the appellate body, the NMA will accept these cases by secure email. This requires a pre-test, and the following procedure must be followed:

1. Contact the NMA for a pre-test to be arranged. The NMA will verify whether the secure email system to be used is accepted or not.

2. The NMA requests passwords to be sent separately to a specific case handler's mobile phone. Please confirm the NMA.

Provided that the NMA accepts your secure email system, all necessary documentation related to the case shall be sent by email to the NMA for further case handling. The appellate body's decision will also be returned by secure email.

17.15.3 SUBMISSION WHEN SECURE EMAIL SYSTEM FAILS

In cases where the secure email system fails to the NMA's standards, the case shall be sent by ordinary postal services to:

The Norwegian Maritime Authority
P. O. Box 2222
N-5509 Haugesund
NORWAY

17.15.4 SUBMISSION FROM SEAFARER'S DOCTORS IN NORWAY

Seafarer's doctors in Norway shall primarily send appeals and applications for exemption by ordinary post. Alternatively, electronic dialog (e-Dialog) with the NMA will be accepted.

17.16 THE FOLLOW-UP OF APPEALS AND APPLICATIONS FOR EXEMPTION

Once the appellate body's leader has handled the appeal or the application for exemption and a decision has been made, the draft of a decision is sent to the NMA for administrative reasons.

The NMA forwards the draft to the representative of the relevant trade union and to a representative of the NMA for their considerations. Provided that they agree with the leader's thorough appraisal of the medical aspects of the case, they accept the draft, and by signing the document the decision made by the appellate body is completed. If they do not agree, the case is being further processed until an agreement has been made.

When the decision is made, the NMA forwards the decision to the relevant person and to the relevant seafarer's doctor by secure email system.

The person is responsible of informing the (relevant) seafarer's doctor (e.g. a new seafarer's doctor) about the appellate body's decision. It is, however, the seafarer's doctor's responsibility to follow up the conditions or restrictions given by the appellate body. This may result in a medical certificate with or without limitations, or a declaration of unfitness.

The seafarer's doctor can never reverse the appellate body of health cases' decisions.

17.17 HOW TO FOLLOW UP ON PREVIOUS DECISIONS BY THE APPELLATE BODY

How should the seafarer's doctor follow up on previous decisions when:

1. stricter requirements are laid down in the health regulations afterwards
2. the person's health condition improves
3. or the person's work situation changes

Only the appellate body may formally alter their decisions. However, situations may call for the seafarer's doctor to make a new decision due to amendments to the Health Regulations, or changes in the employee's health condition or work situation.

In case of doubt, contact the Norwegian Maritime Authority.

17.17.1 CHANGES IN THE HEALTH REGULATIONS

During a new medical examination of a person, the seafarer's doctor must check whether an application for exemption has been granted by the appellate body. If stricter requirements are laid down in the Health Regulations after the decision was made, the seafarer's doctor must prepare a new case for the appellate body if the new regulatory requirements change the precondition for the appellate body's decision.

Example: The appellate body granted an exemption from the vision requirements in 2010, and since then, the vision requirements have become stricter. Is the decision of the appellate body still valid?

Answer: The seafarer's doctor must assess whether the new requirements change the basis of the 2010 decision, or in other words, whether the appellate body's decision includes one or more provisions of the Health Regulations which have since been made stricter. If so, the case needs to be reprocessed and treated as a new case.

The seafarer's doctor must make a decision pursuant to the current Health Regulations, and if the person applies for exemption from the health requirement or files appeals on the decision, the seafarer's doctor will prepare a new case for the appellate body.

17.17.2 CHANGES IN HEALTH STATUS

The health condition of the person has improved after the appellate body made its decision, and it is the assessment of the seafarer's doctor that the current regulatory requirements are fulfilled. The decision of the appellate body may not be appealed by the person or altered by the seafarer's doctor, but the person's health condition can change to the degree that a new case should be opened.

When a new case is due, the seafarer's doctor must make a new assessment in accordance with the Health Regulations. A new case is usually due when new information emerges concerning conditions which were present at the time when the appellate body made its decision, or amendments have been made to the real or legal basis of the decision.

17.17.3 CHANGES IN POSITION/WORK TASKS

If the person starts another position on board with stricter health requirements, one's medical certificate will no longer be valid. In such cases, it is the duty of the company to make sure that the medical certificate is renewed, and the person must undergo a new medical examination by a seafarer's doctor.

The seafarer's doctor must assess whether the health requirements of the person's new position/tasks are met, whether the requirements comply with the current decision by the appellate body, or if an application for exemption is needed.

In cases of doubt, please contact the Norwegian Maritime Authority.

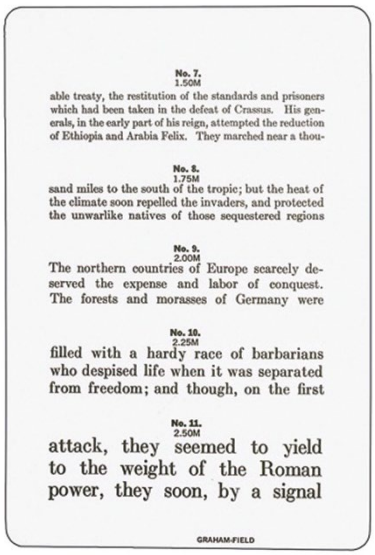
18 EYESIGHT REQUIREMENTS

18.1.1 EYESIGHT EXAMINATION

Reviewed 2025-11-04

- **Distance vision** shall be assessed using the Snellen chart or an equivalent standardised test. The requirements are set out in the STCW Code, Table A-I/9 (see below).

- **Near vision** shall be assessed using a reading chart with graded type sizes. Several such tests are acceptable. One example is the Jaeger reading test, which ranges from J10 (approximately 14-point Times New Roman) to J1 (approximately 3-point Times New Roman).
  Typically, J1 corresponds to 20/20 vision, while J7 corresponds to 20/70 (approximately 10-point Times New Roman). Equivalent standardised near vision tests may also be used, provided they offer comparable grading and reliability.


No. 7.
1.50M
able treaty, the restitution of the standards and prisoners which had been taken in the defeat of Crassus. His generals, in the early part of his reign, attempted the reduction of Ethiopia and Arabia Felix. They marched near a thou-

No. 8.
1.75M
sand miles to the south of the tropic; but the heat of the climate soon repelled the invaders, and protected the unwarlike natives of those sequestered regions

No. 9.
2.00M
The northern countries of Europe scarcely deserved the expense and labor of conquest. The forests and morasses of Germany were

No. 10.
2.25M
filled with a hardy race of barbarians who despised life when it was separated from freedom; and though, on the first

No. 11.
2.50M
attack, they seemed to yield to the weight of the Roman power, they soon, by a signal

GRAHAM-FIELD

Figure 1 Jaeger reading test

- **Colour vision** shall be tested using the Ishihara pseudoisochromatic plates or an equivalent validated method. Individuals who do not pass the Ishihara test may be referred for “lantern testing”, in accordance with the International Recommendations for Colour Vision Requirements for Transport (CIE-143-2001 or subsequent editions) [3].

- Corrective lenses or visual aids may not be used if their purpose is to enhance colour discrimination. This includes red-tinted lenses or filters that artificially improve contrast between green, yellow, and brown tones, enabling individuals with impaired colour vision to pass the Ishihara test.

- **Visual fields** shall initially be assessed using Donders’ method. Any indication of restricted field of vision shall prompt referral to a clinical vision specialist for detailed mapping of the defect.

- **Night vision** limitations may arise from specific eye diseases or as a consequence of ophthalmological procedures. Such limitations may also be detected through low-contrast vision testing. Specialist evaluation is recommended if reduced night vision is suspected. Distance vision shall be tested using the Snellen test type or equivalent. The requirements are set out in the STCW Code, Table A-I/9, see below.

- The capacity for night vision is closely linked to contrast sensitivity. Testing contrast sensitivity provides valuable insight into an individual’s ability to see in low-light conditions such as dusk and dawn and may serve as an indicator of whether their night vision is within acceptable limits.

[3] STW 44/WP.3 Annex 7 «Interim Guidance on colour vision testing» recommends that new methods of colour vision testing are not introduced on a permanent basis before new and validated data are available, or, if applicable, revision of CIE 143-2001. (STW subcommittee meeting 29 April-3 Mai 2013).

- Following **refractive eye surgery** or other ophthalmological procedures that may affect visual function, a specialist examination shall be conducted once the eyesight is presumed to have stabilised. This assessment should include evaluation of contrast sensitivity, night vision, and any occurrence of halo, stardust, or similar phenomena.

- This is particularly important for individuals performing navigational watch duties.

The eyesight requirements are set out in the STCW Code, Table A-I/9: Minimum in-service eyesight requirements for seafarers on board ship

STCW Convention regulation	Category of seafarer	Distance vision aided[1]		Near/intermediate vision	Colour vision[3]	Visual fields[4]	Night blindness[4]	Diplopia (double vision)[4]
		One eye	Other eye	Both eyes together, aided or unaided				
I/11 II/1 II/2 II/3 II/4 II/5 VII/2	Masters, deck officers and ratings required to undertake look-out duties	0,5[2]	0,5	Vision required for ship's navigation (e.g. chart and nautical publication reference, use of bridge instrumentation and equipment, and identification of aids to navigation)	See Note 6	Normal visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident
I/11 III/1 III/2 III/4 III/5 III/6 III/7 VII/2	All engineer officers, electro-technical officers, electro-technical ratings and ratings or others forming part of an engine-room watch	0,4[5]	0,4[5]	Vision required to read instruments in close proximity, to operate equipment, and to identify systems/components as necessary	See Note 7 and No. 4.6.4 in the guide	Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident
I/11 IV/2	GMDSS Radio operators	0,4	0,4	Vision required to read instruments in close proximity, to operate equipment, and to identify systems/components as necessary		Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No significant condition evident

Notes:

1. Values given in Snellen decimal notation.
2. A value of at least 0.7 in one eye is recommended to reduce the risk of undetected underlying eye disease.
3. As defined in the "International Recommendations for Colour Vision Requirements for Transport" by the Commission Internationale de l'Eclairage (CIE-143-2001 including any subsequent versions).
4. Subject to assessment by a clinical vision specialist were indicated by initial examination findings.
5. Engine department personnel shall have a combined eyesight vision of at least 0.4.
6. CIE colour vision standard 1 or 2.
7. Based on the STCW Convention Part A-1/9, No. 5, the requirement for colour vision for engineers, electro-technical ratings etc. forming part of an engine-room watch is that their combined vision fulfils the requirements set out in table A-1/9.

18.2 RISKS RELATED TO IMPAIRED VISION

Reviewed 2025-11-04

Impaired vision in individuals working on board ships may pose a safety risk, both during routine operations and in emergency situations. The degree of risk will vary depending on the nature of the position and associated duties. Impaired vision presents the greatest risk for personnel engaged in navigational watch, followed by other safety-critical functions. It is of least significance for individuals who are not part of the vessel's safety manning.

Under normal circumstances, visual acuity with corrective lenses will be the determining factor. The use of such correction is generally expected in emergency situations as well. However, circumstances may arise in which glasses or contact lenses are lost or damaged and therefore cannot be used. Certain eye conditions may also temporarily prevent the use of contact lenses.

The risk associated with loss of corrective lenses may be mitigated by ensuring that spare glasses or contact lenses are available on board. Temporary illness resulting in an inability to use contact lenses can similarly be mitigated by using glasses during the affected period.

Accordingly, any individual who relies on glasses or contact lenses must be advised to bring at least two pairs of glasses on board.

18.3 ENHANCED ASSESSMENT OF HIGH RISK POSITIONS

Reviewed 2025-11-04

Several modern navigational aids — such as radar, electronic charts, automatic position-fixing via AIS or GPS, traffic monitoring systems, and improved fairway marking — have reduced the reliance on visual navigation. Nevertheless, there remain situations where visual lookout and manual navigation are essential.

Small vessels may lack radar reflectors; floating objects in the fairway may pose hazards to navigation; radar images may be distorted by adverse weather conditions; and identification of lights, beacons, and lighthouses remains critical. Accurate interpretation of fairway colour coding is also consistently required.

Visual acuity is particularly challenged when operating high-speed craft, especially in turbid or cluttered waters, as frequently encountered along the Norwegian coast. Increasing light pollution from land — resulting from industrial development, residential expansion, and transport infrastructure — makes it more difficult to distinguish navigational light signals from other sources.

A position that demands heightened vigilance is that of navigator on passenger high-speed craft operating along the Norwegian coastline.

18.4 NIGHT VISION AND RELATED VISUAL FUNCTIONS

Reviewed 2025-11-04

The Health Regulations require that night vision shall be "normal", in accordance with the standards set out in the STCW Convention. The following recommendations are partly adapted from the guidance to the Norwegian driver's licence regulations.

Methods for assessing night vision are not readily available. Night vision differs from daylight vision in several key respects:

- The pupils dilate to allow more light to enter

- Rod cells, rather than cone cells, are used for light perception
- Night vision is primarily, or entirely, monochromatic

In addition to the individual's self-report, contrast sensitivity testing is used to assess night vision capacity.

To be considered as having normal night vision, the individual must not exhibit reduced contrast sensitivity or significant difficulty in counterlight conditions.

If the applicant reports problems in situations involving glare or reduced visibility, they should be referred to an ophthalmologist or optician with the appropriate equipment and expertise to assess contrast sensitivity.

Where progressive eye disease is suspected, referral to an ophthalmologist is required. Advancing age and progressive ocular conditions are the most common causes of impaired night vision.

Night vision and dark adaptation may be impaired by various conditions. If impairment reaches the level of functional night blindness, this constitutes a safety risk for personnel performing bridge watch duties.

Contrast sensitivity typically declines with age, particularly in the presence of cataract. Cataract surgery may restore contrast sensitivity. In conditions such as glaucoma, macular degeneration, and following refractive surgery, contrast sensitivity may be significantly reduced—even when visual acuity remains intact.

Glare sensitivity is the most difficult visual function to measure objectively. The applicant's own description — such as difficulty when exiting tunnels into bright light, driving in low sun, or navigating in areas with strong shore-based lighting — can offer valuable insight and should be considered in the optician's or ophthalmologist's overall assessment.

Contrast sensitivity and glare sensitivity are closely related visual functions, both of which affect night vision and the ability to operate safely in low-light or visually challenging environments. However, they refer to distinct aspects of visual performance and should be assessed separately.

- Contrast sensitivity refers to the ability to distinguish objects from their background when contrast is low (e.g. grey-on-grey or dim lighting). It can be measured objectively using standardised tests such as the Pelli-Robson chart or equivalent.

- Glare sensitivity refers to the degree to which vision is impaired by bright light, counterlight, or reflections. It is more difficult to measure objectively and is typically assessed through the individual's own description of symptoms.

Glare sensitivity is particularly relevant in maritime settings, such as when navigating in areas with strong shore-based lighting that interferes with the recognition of navigational lights. Examples include difficulty seeing when exiting a tunnel into bright sunlight, driving in low sun, or manoeuvring in coastal areas with industrial or residential lighting.

There are currently no universally accepted or validated tests for glare sensitivity. Therefore, the ophthalmologist or optician must incorporate the applicant's self-reported experiences into a holistic assessment of visual function. This includes evaluating whether any impairment poses a safety risk while serving on board.

18.5 EYE SURGERY

Reviewed 2025-11-04

The use of refractive eye surgery with the aim of improving performance on vision testing — such as the Snellen chart assessment conducted by the seafarer's doctor — is generally not recommended. Some individuals may experience postoperative complications including blurred vision, halo effects, stardust phenomena, or glare. These issues tend to be most pronounced in low-light conditions, particularly when the pupil dilates[4].

Such side effects may compromise night vision, contrast sensitivity, and overall visual acuity. Importantly, these impairments may not be detected during routine eye examinations, meaning the individual could still pose a safety risk in practical service on board, even if they meet the formal examination criteria.

For this reason, any individual who has undergone refractive eye surgery must undergo a specialist assessment of visual acuity, contrast sensitivity, and night vision once postoperative stability has been achieved. The results must be deemed satisfactory before a medical certificate can be issued.

Complications after laser refractive surgery

PRK/LASIK/LASEK	More common in PRK	More common in LASIK	More common in LASEK
Overcorrection/ undercorrection	Postoperative pain	Flap complications	Postoperative pain
Astigmatism	Delayed epithelial healing	Epithelial ingrowth	Stromal haze
Regression	Infection	Diffuse lamellar keratitis (Sands of Sahara)	Flap complications
Dry eye symptoms	Scarring/stromal haze		
Reduced contrast sensitivity			

PRK: phtorefractive keratectomy. LASIK: laser-assisted in situ keratomileusis. LASEK: Laser epithelial keratomileusis.

Source: UpToDate accessed 7th July 2014

[4] McDonald MB, Carr JD, Frantz JM, Kozarsky AM, Maguen E, Nesburn AB, Rabinowitz YS, Salz JJ, Stulting RD, Thompson KP, Waring GO 3rd: Laser in situ keratomileusis for myopia up to -11 diopters with up to -5 diopters of astigmatism with the summit autonomous LADARVision excimer laser system. Ophthalmology. 2001;108(2):309.

18.5.1 REFRACTIVE EYE SURGERY

Reviewed 2025-11-27

Individuals undergoing refractive eye surgery have a 90-99% chance of achieving unaided visual acuity of 5/10 or better [5] [6] and 57-79% achieve 5/5 or better [7] [8] [9] [10]. The result of each study is based on each patient's refraction and the degree of astigmatism. Approximately 85% of patients attain unaided vision of 4/5 or better, enabling them to function without corrective visual aids in daily life. Patient satisfaction following LASIK is generally high.[11].

The degree of myopia, whether myopia or hyperopia, and the presence of astigmatism are key factors influencing surgical outcomes. Patients with low myopia and no astigmatism tend to achieve the most favourable results, whereas those with hyperopia and astigmatism experience more variable and less predictable outcomes [12] [13] [14] [15] [16] [17] [18] [19].

- Additional factors affecting surgical success include
- Type of procedure used (PRK, LASIK, LASEK)
- The surgeon's skills and experience
- Quality control and maintenance of surgical equipment is crucial for precise ablation
- The type of laser will also have an effect. Newer generations of small flying spot laser beams (<100 microns) with eye tracking systems theoretically gives better results than older beams (4-5 mm) without eye tracking system[20]. Larger randomised studies are not available.

Short and Allan compared the results from six randomised studies (417 eyes) between PRK and LASIK for myopia correction[21]. Visual acuity stabilised more rapidly with LASIK, although surgical accuracy was comparable. Six months postoperatively, a slightly higher proportion of LASIK-treated eyes achieved unaided vision of 5/5 or better, though the difference was not statistically significant. No

[5] McDonald MB, Carr JD, Frantz JM, Kozarsky AM, Maguen E, Nesburn AB, Rabinowitz YS, Salz JJ, Stulting RD, Thompson KP, Waring GO 3rd. Laser in situ keratomileusis for myopia up to -11 diopters with up to -5 diopters of astigmatism with the summit autonomous LADARVision excimer laser system. Ophthalmology. 2001;108(2):309.

[6] el Danasoury MA, el Maghraby A, Klyce SD, Mehrez K. Comparison of photorefractive keratectomy with excimer laser in situ keratomileusis in correcting low myopia (from -2.00 to -5.50 diopters). A randomized study. Ophthalmology. 1999;106(2):411.

[7] El-Maghraby A, Salah T, Waring GO 3rd, Klyce S, Ibrahim O. Randomized bilateral comparison of excimer laser in situ keratomileusis and photorefractive keratectomy for 2.50 to 8.00 diopters of myopia. Ophthalmology. 1999;106(3):447.

[8] Kawesch GM, Kezirian GM. Laser in situ keratomileusis for high myopia with the VISX star laser. Ophthalmology. 2000;107(4):653

[9] Linebarger EJ, Hardten DR, Lindstrom RL: Diffuse lamellar keratitis: diagnosis and management. J Cataract Refract Surg. 2000;26(7):1072.

[10] Sakimoto T, Rosenblatt MI, Azar DT. Laser eye surgery for refractive errors. Lancet. 2006;367(9520):1432.

[11] Bailey MD, Mitchell GL, Dhaliwal DK, Boxer Wachler BS, Zadnik K. Patient satisfaction and visual symptoms after laser in situ keratomileusis. Ophthalmology. 2003;110(7):1371.

12 El-Maghraby A, Salah T, Waring GO 3rd, Klyce S, Ibrahim O. Randomized bilateral comparison of excimer laser in situ keratomileusis and photorefractive keratectomy for 2.50 to 8.00 diopters of myopia. Ophthalmology. 1999;106(3):447

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15 Yoo SH, Azar DT. Laser in situ keratomileusis for the treatment of myopia. Int Ophthalmol Clin. 1999;39(1):37.

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18 Corones F, Gobbi PG, Vigo L, Brancato R. Photorefractive keratectomy for hyperopia: long-term nonlinear and vector analysis of refractive outcome. Ophthalmology. 1999;106(10):1976.

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20 McDonald MB, Deitz MR, Frantz JM, Kraff MC, Krueger RR, Salz JJ, Kraff CR, Maguen E, Matta CS, Nesburn AB, Piebenga LW. Photorefractive keratectomy for low-to-moderate myopia and astigmatism with a small-beam, tracker-directed excimer laser. Ophthalmology. 1999;106(8):1481.

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comparable studies exist for hyperopia[22], and long-term differences between PRK and LASIK remain uncertain.

Ten-year outcomes have been published in several studies. Alió et al reported results for both low and high myopia following PRK and LASIK, based on a total of 785 eyes [23] [24] [25] [26]. These studies demonstrated stable refraction and generally favourable outcomes. Myopic regression typically occurs within the first two years postoperatively and is uncommon thereafter. Retreatment was performed in 20–45% of cases, usually more than two years after the initial procedure, and was generally well tolerated.

In another study involving 779 eyes in 402 individuals with five-year follow-up after LASIK, best-corrected vision remained unchanged in 98% of patients compared to one-month post-surgery. Retreatment was performed in 17.5% of cases, on average 2.5 years after the initial procedure [27]. Patient satisfaction following LASIK is consistently high. A systematic review of 19 studies on quality of life and satisfaction reported an average satisfaction rate of 95.4% [28].

18.5.2 OTHER EYE SURGERY

Reviewed 2025-11-27

Any surgical intervention involving the eye that affects the optical structures (cornea, anterior chamber, lens, vitreous body) or the neurosensory structures (retina and optic nerve) has the potential to impair contrast sensitivity and to induce other visual disturbances such as halos, glare, or starburst phenomena. However, the impact may also be beneficial, depending on the type of procedure, the patient's baseline condition, and the course of healing.

- **Cornea:** Alterations in corneal curvature, scarring, or opacities may scatter light and thereby reduce contrast sensitivity [29].
- **Anterior chamber:** Procedures that influence aqueous humour dynamics or involve implantation of drainage stents for glaucoma can indirectly modify optical properties [30] [31].

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[29] Understanding Contrast Sensitivity in Corneal Transplantation. A Comprehensive Guide to Improving Visual Outcomes After Surgery. www.numberanalytics .com. 15. June 2025.
[30] Criterion for Glaucoma Detection and Measuring Treatment. VectorVision. https://www.vectorvision.com/clinical-use-glaucoma/ visited 2025.11.27.
[31] What Is a Glaucoma Drainage Implant? American Academy of Ophtalmology. https://www.aao.org/eye-health/diseases/glaucoma-drainage-implants Visited 2025.11.27.

- **Lens:** Replacement of the natural lens with an artificial intraocular lens (IOL) may diminish contrast sensitivity, particularly in the case of multifocal lenses that distribute light across several focal points [32] [33] [34] [35].
- **Vitreous body:** Vitrectomy may remove opacities and improve vision, but subsequent scarring or altered light transmission can compromise contrast perception [36] [37] [38].
- **Retina:** Any intervention that alters photoreceptor architecture or macular function (e.g. retinal detachment repair, macular hole surgery, or treatment of retinopathy) may lead to persistent reduction in contrast sensitivity, even when visual acuity remains acceptable [39] [40] [41].

Conclusion: Any ocular surgery that affects optical or neurosensory structures carries the potential to impair contrast sensitivity and therefore falls within the requirement to assess this parameter. By contrast, procedures involving external structures, such as strabismus surgery with repositioning of extraocular muscle insertions, do not fall under this category.

18.6 PERSONS NOT COVERED BY THE STCW CONVENTION

Reviewed 2025-11-04

All persons on board ships should meet a minimum unaided visual acuity of 0.1 in each eye, as specified in the STCW Code, Section B-I/9, paragraph 10. This requirement is relevant not only for seafarers covered by the STCW Convention, but also for other personnel on board, to ensure sufficient visual capability in emergency situations where corrective lenses may be lost or damaged.

In addition to the formal vision standards outlined in Table A-I/9, all individuals working on board should possess unaided vision of at least 0.1 in each eye.

Seafarers not subject to the STCW Convention's eyesight standards must nonetheless have vision adequate to perform both routine and emergency duties safely and effectively.

18.7 SHORT-SIGHTEDNESS / MYOPIA

Reviewed 2025-11-04

Individuals with severe short-sightedness (myopia) have an increased risk of retinal detachment. Approximately 55% of cases of spontaneous retinal detachment occur in persons with significant myopia. When the refractive error is between –1 and –3 diopters, the risk is approximately four times

[32] What Is Contrast Sensitivity and How Do IOLs Affect It? London Cataract Centre. Published 2025.11.24. https://www.londoncataractcentre.co.uk/blog/contrast-sensitivity-and-iols/ Visited 2025.11.27
[33] Goldman, G. Clinical results with a multifocal intraocular lens with a novel optical design. BMC Ophthalmol 24, 269 (2024). https://doi.org/10.1186/s12886-024-03521-7
[34] Cho J, Won YK, Park J, et al. Visual Outcomes and Optical Quality of Accommodative, Multifocal, Extended Depth-of-Focus, and Monofocal Intraocular Lenses in Presbyopia-Correcting Cataract Surgery: A Systematic Review and Bayesian Network Meta-analysis. JAMA Ophthalmol. 2022;140(11):1045–1053. doi:10.1001/jamaophthalmol.2022.3667
[35] How to Reduce Halos and Glare with Multifocal Lenses: A Patient's Guide.Precision vision London. Published 2025.09.18. Visited 2025.11.27 https://precisionvisionlondon.com/how-to-reduce-halos-and-glare-with-multifocal-lenses-a-patients-guide/
[36] Sebag J et al. Long-term safety and efficacy of limited vitrectomy for vision degrading vitreopathy resulting from vitreous floaters. Ophtalmol. 2018;2(9):881-887.
[37] Ichsan A M et al. Visual acuity and contrast sensitivity outcomes based on photoreceptor layer after retinal reattachment surgery. Edorium J Ophthalmol 2019;2:100002O02AI2019.
[38] Karunatilake, M., Fijardo, B., Michael, E. et al. Outcomes of pars plana vitrectomy for visually significant floaters in Northern Alberta. Int J Retin Vitr 11, 54 (2025). https://doi.org/10.1186/s40942-025-00676-3
[39] Murakami T, Okamoto F, Sugiura Y, et alContrast sensitivity and quality of life following intravitreal ranibizumab injection for central retinal vein occlusionBritish Journal of Ophthalmology 2023;107:254-260.
[40] Baldwin G et al. Clinical Characteristics of Reduced Contrast Sensitivity After Retinal Detachment Repair. Invest. Ophtalmol. Vis. Sci. 2023;64(8):2485
[41] Ichsan AM, Tajuddin AS, Muhiddin HS, Budu, Umar BT, Waspodo N. Visual acuity and contrast sensitivity outcomes based on photoreceptor layer after retinal reattachment surgery. Edorium J Ophthalmol 2019;2:100002O02AI2019.

higher than in the general population. In cases of myopia exceeding –3 diopters, the risk increases tenfold [42].

Despite this relative increase, the overall incidence of retinal detachment remains low—estimated at approximately 1 in 10,000 per year [43] [44] — meaning that the absolute risk remains limited in most cases.

18.8 COLOUR VISION

Reviewed 2025-11-04

Reduced colour vision represents a safety risk for individuals serving on board ships, particularly those engaged in navigational and watchkeeping duties. This risk assessment is based on the International Recommendations for Colour Vision Requirements for Transport (CIE 143-2001) issued by the International Commission on Illumination.

Impaired colour vision leads to diminished ability to identify signal colours reliably [45].
Individuals with colour vision deficiency also tend to react more slowly to signal lights [46] [47], and to colour-coded information on computer screens [48].

Between one-quarter and one-third of individuals with defective colour vision report difficulty distinguishing road traffic lights from surrounding street lighting. A smaller proportion experience problems recognising brake lights. Among those with more severe colour vision deficiency, up to 50% report difficulty with traffic light recognition [49].

Many individuals adapt by interpreting contextual cues— such as the position of traffic lights, the sharpness or intensity of the light, and the reactions of other road users. However, when such supporting factors are absent, these individuals may experience significantly greater difficulty.

Task or activity	% with difficulty
DRIVING	
Separating colours in traffic signal	29
Mixing street lights and traffic lights	26
Difficulty seeing brake lights	13
Difficulty seeing reading marking of roads	9
WORK	
Colour vision deficiency has affected career choice	34
Experienced difficulty due to reduced colour vision in current job	25
Difficulties due to reduced colour vision in previous job	23
ACTIVITIES IN EVERYDAY LIFE	
Choosing coloured products (clothes, paint, interior, cosmetics)	74
Work with craft or hobby (colour coded cable, thread, wool, paint, etc.)	39

[42] [Risk factors for idiopathic rhegmatogenous retinal detachment. The Eye Disease Case-Control Study Group. Am J Epidemiol. 1993;137(7):749. (PMID: 8484366) – Author not listed in the article.]
[43] Wilkes SR, Beard CM, Kurland LT, Robertson DM, O'Fallon WM.The incidence of retinal detachment in Rochester, Minnesota, 1970-1978. Am J Ophthalmol. 1982;94(5):670
[44] Haimann MH, Burton TC, Brown CK Epidemiology of retinal detachment. Arch Ophthalmol. 1982;100(2):289
[45] Vingrys and Cole, 1988
[46] Nathan et al, 1964
[47] Cole and Brown, 1966
[48] Cole and Macdonald, 1988
[49] Vingrys and Cole, 1989

Although radar and satellite navigation have reduced reliance on visual signal lights at sea, it remains essential for nautical personnel to be able to recognise navigation lights, port lights, beacons, and lighthouses in order to navigate safely. The most critical colours for maritime signalling are red, green, white, and occasionally yellow.

These signals must often be identified from a distance and under challenging visibility conditions. When navigating along coastlines, rivers, or lakes, competing light sources from the shore may interfere with visual recognition and make observation more difficult.

Daylight fairway marking is also colour-coded but typically incorporates distinctive shapes to aid interpretation. The colours used include green, yellow, orange, red, and black.

Coloured flags continue to be used for ship-to-ship and ship-to-shore communication. In addition, colour-coding is extensively applied to piping and cabling on board to indicate function and system type.

The introduction of modern technology for navigation and ship control has increased the complexity of visual interfaces on computer screens, both on the bridge and in the engine room. These screens frequently employ colour-coding to organise, differentiate, and define complex information, to indicate operational status, and to present alarms.

Studies have shown that colour-coding improves both the accuracy and speed of decision-making [50]. Conversely, defective colour vision has been shown to impair these same performance parameters [51].

18.8.1 TYPES OF COLOUR VISION DEFICIENCY / COLOUR BLINDNESS

Reviewed 2025-11-04

Red-Green Deficiencies: The most common type, affecting approximately 8% of males and 0.5% of females. This includes:

- Protanopia: Inability to perceive red light - 1% of men
- Deuteranopia: Inability to perceive green light – 1% of men
- Protanomaly: Reduced sensitivity to red light – 1 % of men
- Deuteranomaly: Reduced sensitivity to green light – 5 % of men
-

Blue-Yellow Deficiencies: Less common and includes:

- Tritanopia: Inability to perceive blue light.
- Tritanomaly: Reduced sensitivity to blue light.
-

Complete Color Blindness (Achromatopsia): A rare condition where individuals cannot see any colours at all, only shades of grey.

Scholz et al[52] found that approximately one-third of anomalous trichromats and more than half of dichromats were unable to identify the target colours on a colour-coded sonar screen during a 640-second observation period—a task successfully completed by 98% of individuals with normal colour vision.

The STCW Convention, as amended, stipulates that **CIE 143-2001: International Recommendations for Colour Vision Requirements for Transport** shall serve as the standard for colour vision testing of

[50] Christ, 1975; Macdonald and Cole 1988
[51] Cole and Macdonald, 1988
[52] Scholz et al [1995]

seafarers. This requirement is also incorporated into the ILO-IMO International Guidelines on the Medical Examination of Seafarers.

According to CIE 143-2001, colour vision, colour vision deficiency, and colour blindness are classified into distinct categories, enabling a structured assessment of functional capability in transport-related tasks.

18.8.1 STANDARDS FOR COLOUR VISION RECOMMENDED BY CIE (COMMISSION INTERNATIONAL DE L'ECLAIRAGE).

Standard 1 shall be used for masters, deck officers and ratings required to undertake look-out duties on board ships of more than 500 tonnes.

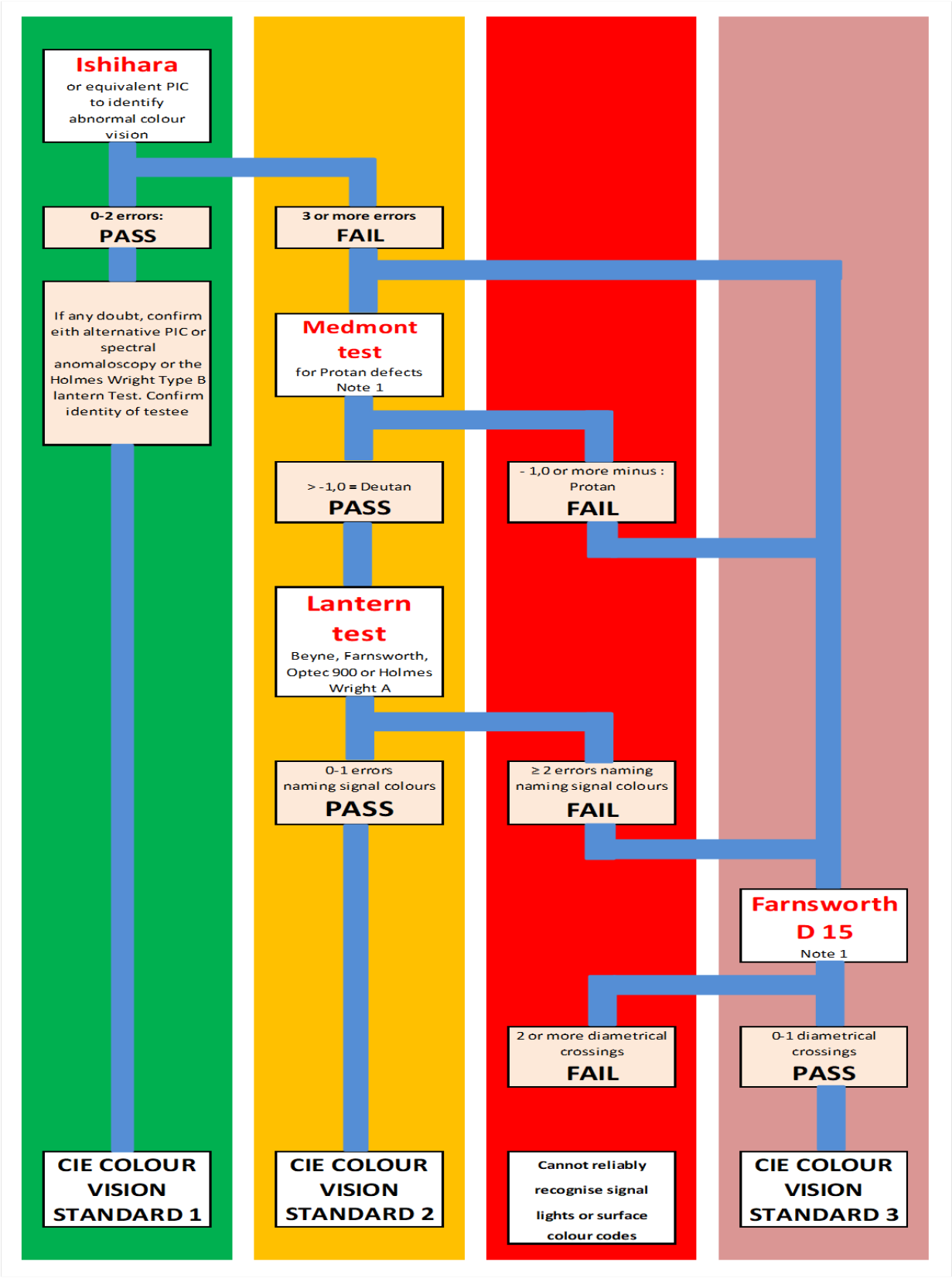
Standard 2 shall be used for masters, deck officers and ratings required to undertake look-out duties on board ships of less than 500 tonnes approved for commercial traffic.

Standard 3 shall be used for engineer officers and engine department personnel, radio personnel and electro-technical officers/ratings on board ships of more than 500 tonnes and with propulsion power of more than 750 kW.

18.8.1.1 ALGORITHM FOR COLOUR VISION TESTING

Reviewed 2025-11-04

The following algorithm could be used, and serve as a short overview of the testing procedure:



18.8.2 COLOUR VISION REQUIREMENTS FOR PERSONS FORMING PART OF AN ENGINE-ROOM WATCH[53]

Reviewed 2025-11-04

Colour vision requirements vary depending on the specific duties and occupational role on board.

In accordance with the STCW Convention, Part A-I/9, fifth paragraph, final sentence, the Norwegian Maritime Authority has adopted the following interpretation regarding colour vision standards for the occupational groups referenced above[54]:

If an individual satisfies all other visual requirements outlined in Table A-I/9, it may be accepted that their colour vision is below the level specified in CIE Standard 3. In such cases, the individual shall be considered to have met the colour vision requirements for service in that capacity, and the corresponding field on the medical certificate shall be marked as satisfied.

Conversely, if the individual does not meet the general eyesight requirements in Table A-I/9 and also fails to meet the colour vision standard in CIE Standard 3, they shall be deemed not to fulfil the colour vision requirements for the position. The relevant field on the medical certificate shall be marked as not satisfied.

Norway has adopted this interpretation of the STCW Convention to prevent experienced engine-room personnel from being disqualified due to the updated colour vision requirements. Based on national experience, there is no medical or safety-related justification for applying CIE Standard 3 to engine-room duties. In practice, individuals with defective colour vision are overrepresented in these occupational groups, as many who initially enrolled in navigator programmes at maritime schools have transferred to mechanical or electro-engineering tracks after being identified as colour vision deficient. Given the absence of safety-related grounds for stricter requirements, Norway — as a flag State — has chosen to exercise the flexibility provided under Part A-I/9 of the STCW Convention.

Accordingly, it is correct to certify that an engineer meets the colour vision requirements even if they do not pass the CIE Standard 3 test. However, such individuals shall not be considered fit to form part of a navigational watch, and this limitation must be clearly stated on the medical certificate.

18.9 MONOCULAR VISION

Reviewed 2025-11-04

Monocular vision is not permitted for service on board. Although this is not explicitly stated in the STCW Convention, it follows from the requirement that minimum visual acuity must be achieved in each eye.

As this requirement constitutes part of the minimum standards established by an international convention (STCW), applications for exemption cannot be expected to be granted.

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53 If the rating also forms part of a navigational watch, these exemption clauses do not apply to him/her.

54 Norway has made this interpretation of the STCW Convention in order to avoid that persons currently working in the engine-room are put ashore as a result of the new requirements for colour vision in the STCW Convention. Our experience is that there is no medical or safety-related justification for the requirement for colour vision in accordance with the CIE standard 3 for working in the engine-room. The current situation is that persons with defective colour vision are overrepresented within the concerned occupational groups, since several who initially applied to the navigator programme in maritime schools have switched to a mechanical and electro-engineering programme if they are found to have defective colour vision.
As there are no safety-related grounds for the stricter requirement in the STCW Code, we as flag State choose to take advantage of the flexibility set up by the STCW Convention in Part A-1/9 fifth paragraph.
In these cases it will consequently be correct to check the engineer fulfils the requirements for colour vision even if he or she does not pass the CIE standard 3 test.

18.10 DIPLOPIA

See: 16.8.1.10

19 HEARING

19.1 THE IMPORTANCE OF SEFARERS' HEARING CAPACITY

19.1.1 SPEECH COMMUNICATION

Reviewed 2025-11-05

Sufficient auditory capacity is essential for effective verbal communication, whether conducted directly or via radio or telephone. Ambient noise may impede the transmission and reception of spoken messages, while linguistic differences can impose additional perceptual demands. Misinterpretation of verbal exchanges may have serious implications for safety.

19.1.2 ALARMS

Reviewed 2025-11-05

Acoustic signals are often used as alarms, and it is of course important that these are heard. Persons using hearing aids normally sleep without these, and mitigating mechanisms must therefore be established in order to ensure that a safety-critical warning will also be heard by persons with hearing loss when they are sleeping.

19.1.3 COMPARISON BETWEEN DIRECT VERBAL COMMUNICATION AND RADIO/TELEPHONE TRANSMISSION

Reviewed 2025-11-05

Speech perception is generally better in direct conversation than in radio/telephone communication, since additional information may be deduced from body language, facial expressions, reading of lips, better situational understanding and similar.

19.2 HEARING REQUIREMENTS

19.2.1 THE HEARING REQUIREMENTS AS SPECIFIED IN THE STCW CONVENTION

Reviewed 2025-11-05

Hearing standards applicable to seafarers serving in positions requiring a Certificate of Competency under the STCW Convention are defined as follows:

Frequency	500 Hz	1000 Hz	2000 Hz	3000 Hz
Best ear	Average hearing capacity at least 30 dB			
Weakest ear	Average hearing capacity at least 40 dB			

These thresholds correspond approximately to the ability to perceive whispered speech at distances of 3 metres (best ear) and 2 metres (weakest ear).

19.2.2 HEARING REQUIREMENTS FOR SEAFARERS NOT IN A POSITION FOR WHICH A CERTIFICATE OF COMPETENCY IS REQUIRED PURSUANT TO THE STCW CONVENTION

Reviewed 2025-11-05

Seafarers performing duties not covered by the STCW Convention shall have satisfactory social hearing.

19.3 THE BASICS ON HEARING LOSS

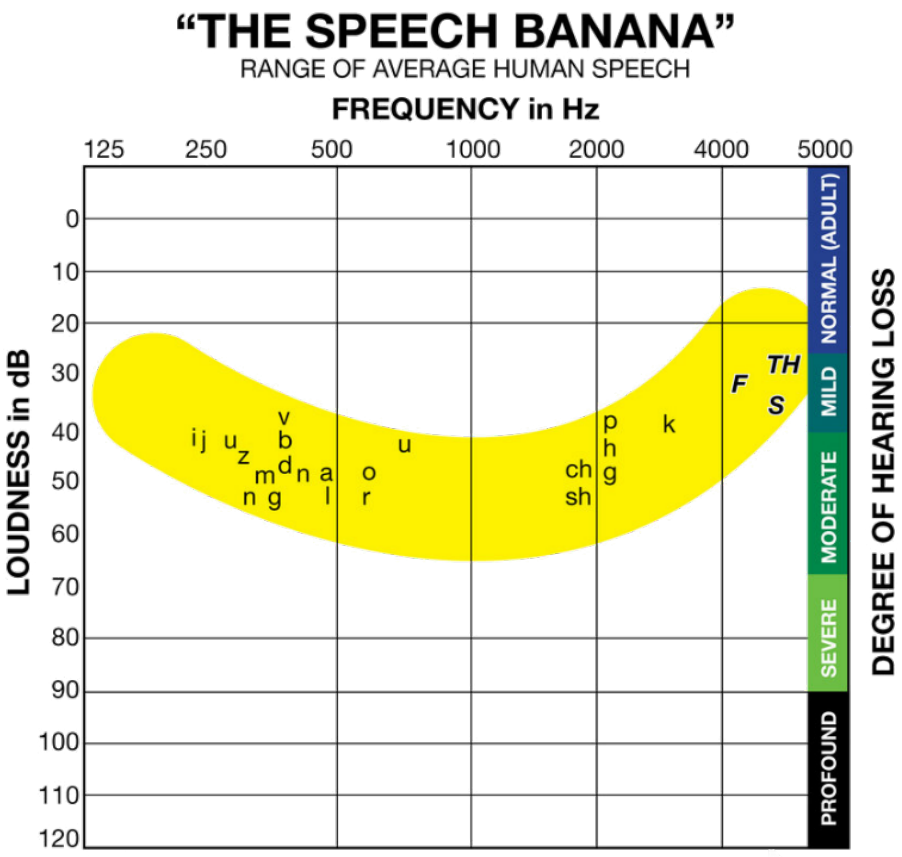
Reviewed 2025-11-05

Speech recognition is largely dependent on the signal-to-noise ratio (SNR); however, there is limited evidence regarding the specific degree of hearing loss at which comprehension of spoken language becomes impaired.

The frequency range of 250–5,000 Hz is critical for speech recognition, with intermediate and higher frequencies playing a key role in distinguishing phonetic elements.

For many individuals with hearing impairment, the perception of unvoiced consonants and sibilants is particularly affected. Speech sounds such as /p/, /t/, /k/, /sh/, /ch/, /f/, /s/, /z/, and /th/ may be inaudible or easily confused. Similar difficulties may arise with the differentiation of /n/, /m/, /ng/, and /b/, /d/, /g/. In most cases, hearing loss is most pronounced within the 1,000–8,000 Hz range, which is especially significant for speech recognition, as this is where consonants and consonant clusters are primarily perceived.

The



speech recognition area may be illustrated by the so-called "speech banana". Words located towards the lower-frequency (left) side of the banana are generally easier for individuals with hearing loss to perceive. In contrast, words situated towards the higher-frequency (right) side tend to present greater challenges, as hearing loss typically becomes more pronounced with increasing frequency.

19.4 USE OF A HEARING AID

Reviewed 2025-11-05

While the use of a hearing aid may partially compensate for hearing loss, it does not restore normal auditory function. Speech discrimination often remains challenging, particularly in the presence of background noise. Consequently, the use of a hearing aid does not in itself imply that the individual has compensated for the hearing deficit to an extent that satisfies the hearing requirements for the issuance of a medical certificate. The presence of tinnitus may further complicate the assessment.

19.4.1 TESTING OF IINDIVIDUALS WITH A HEARING AID

Reviewed 2025-11-05

It is essential that individuals using hearing aid(s) are tested under conditions that simulate the acoustic environment on board. Hearing assessment with hearing aid(s) cannot be conducted using pure-tone audiometry alone. Instead, speech audiometry must be employed, incorporating various types of background noise—such as conversational noise, wind noise, and machinery noise. Adequate speech recognition must be demonstrated under these conditions.

During speech audiometry, two key parameters are evaluated: the Speech Recognition Threshold (SRT) and the Word Discrimination Score. The SRT represents the lowest intensity level at which the individual can correctly repeat 50% of the test words; this corresponds to the signal-to-noise ratio (SNR) yielding 50% accuracy. SRT is measured in decibels and typically approximates the average pure-tone audiometry threshold ±6 dB. The average pure-tone threshold is calculated across the frequencies 500 Hz, 1000 Hz, and 2000 Hz.

The Word Discrimination Score reflects the percentage of words correctly repeated at a specified intensity level, for example, 40 dB above the SRT. A low discrimination score may suggest a neurogenic origin of the hearing loss, in which case the benefit of hearing aids may be limited, as amplification alone does not improve speech recognition. Testing should be conducted with varying types and levels of background noise.

At present, no definitive thresholds have been established for speech audiometry to determine whether hearing aids sufficiently mitigate the safety risks associated with hearing loss. In such cases, the assessment must rely on the clinical judgement of an ENT specialist.

19.5 SINGLE-SIDED HEARING

Reviewed 2025-11-05

Individuals with unilateral hearing loss may experience difficulty in comprehending speech originating from the impaired side, challenges in sound localisation, and reduced speech recognition in the presence of background noise. Under quiet conditions with minimal ambient noise, speech discrimination is generally comparable to that of individuals with normal bilateral hearing. The use of a Contralateral Routing of Signals (CROS) hearing aid may offer benefit to persons with monaural hearing loss.

19.6 PRESBYCUSIS

See: 16.8.3.3

20 PHYSICAL CAPABILITY REQUIREMENTS

20.1 INTRODUCTION TO PHYSICAL CAPABLILITY REQUIREMENTS

Reviewed 2025-11-05

The physical capability requirements for service at sea vary considerably and must encompass both routine operational duties and emergency response tasks. Accordingly, sufficient physical ability is required in the following domains:

- Strength;
- Stamina;
- Flexibility;
- Balance and coordination;
- Size – compatible with work in confined spaces and moving through restricted openings;
- Exercise capacity – adequate cardiovascular and respiratory reserve; and
- Task-specific fitness – for example, the ability to carry breathing apparatus as a member of the fire party

Relevant skills and associated physical capabilities are outlined in STCW Code B – Table B-I/9. Norwegian regulatory requirements are based on this table, which provides a reliable indication of the functional competencies that seafarers must possess.

Table B-I/9
Assessment of minimum entry level and in-service physical abilities for seafarers[3]

Shipboard task, function, event or condition[3]	Related physical ability	A medical examiner should be satisfied that the candidate[4]
Routine movement around vessel **On moving deck** **Between levels** **Between compartments** **Note 1 applies to this row**	Maintain balance and move with agility Climb up and down vertical ladders and stairways Step over coamings (e.g. Load Line Convention requires coamings to be 600 mm high) Open and close watertight doors	Has no disturbance in sense of balance Does not have any impairment or disease that prevents relevant movements and physical activities Is, without assistance[5], able to: Climb vertical ladders and stairways Step over high sills Manipulate door closing systems
Routine tasks on board **Use of hand tools** **Movement of ship's stores** **Overhead work** **Valve operation** **Standing a for-hour watch** **Working in confined spaces** **Responding to alarms, warnings and instructions** **Verbal communication** **Note 1 applies to this row**	Strength, dexterity and stamina to manipulate mechanical devices Lift, pull and carry a load (e.g., 18 kg) Reach upwards Stand, walk and remain alert for an extended period Work in constricted spaces and move through restricted openings (e.g. SOLAS regulation II-I/3-6.5.1 requires openings in cargo spaces and emergency escapes to have the minimum dimensions of 600 mm x 600 mm.	Does not have a defined impairment or diagnosed medical condition that reduces ability dto perform routine duties essential to the safe operation of the vessel Has ability to: Work with arms raised Stand and walk for an extended period Enter confined space Fulfil eyesight standards (table A-I/9) Fulfil hearing standards set by competent authority or take account of international guidelines

	Visually distinguish objects, shapes and signals Hear warnings and instructions Give a clear spoken description	Hold normal conversation
Emergency duties[6] on board **Escape** **Fire fighting** **Evacuation** **Note 2 applies to this row**	Put on a lifejacket or immersion suit Escape from smoke-filled spaces Take part in fire-fighting duties, including use of breathing apparatus Take part in vessel evacuation procedures	Does not have a defined impairment or diagnosed medical condition that reduces ability to perform emergency duties essential to the safe operation of the vessel Has ability to: Don lifejacket or immersion suit Crawl Feel for differences in temperature Handle fire-fighting equipment Wear breathing apparatus (where required as part of duties)

Notes:
[1] Rows 1 and 2 of the above table describe (a) ordinary shipboard tasks, functions, events and conditions, (b) the corresponding physical abilities which may be considered necessary for the safety of a seafarer, other crew members and the ship, and (c) high-level criteria for use by medical practitioners assessing medical fitness, bearing in mind the different duties of seafarers and the nature of shipboard work for which they will be employed.
[2] Row 3 of the above table describes (a) ordinary shipboard tasks, functions, events and conditions, (b) corresponding physical abilities which should be considered necessary for the safety of a seafarer, other crew members and the ship, and (c) high-level criteria for use by medical practitioners assessing medical fitness, bearing in mind the different duties of seafarers and the nature of shipboard work for which they will be employed.
[3] This table is not intended to address all possible shipboard conditions or potentially disqualifying medical conditions. Parties should specify physical abilities applicable to the category of seafarers (such as "Deck Officer" and "Engine rating"). The special circumstances or individuals and for those who have specialized or limited duties should receive due consideration.
[4] If in doubt, the medical practitioner should quantify the degree or severity of any relevant impairment by means of objective testes, whenever appropriate tests are available, or by referring the candidate for further assessment.
[5] The term "assistance" means the use of another person to accomplish the task.
[6] The term emergency duties is used to cover all standard emergency response situations such as abandon ship or firefighting as well as the procedures to be followed by each seafarer to secure personal survival.

20.2 THE SEAFARER'S DOCTOR'S ROLE IN THE FUNCTIONAL ASSESSMENT

Reviewed 2025-11-05

The seafarer's doctor is responsible for initiating physical capability testing when clinically indicated. The doctor may delegate the practical administration of the test to an assistant or arrange for the assessment to be conducted by an exercise facility or a qualified physiotherapist.

Medical conditions that may result in reduced physical capability must prompt appropriate functional testing. See section below regarding medical conditions and physical performance.

20.3 MEDICAL CONDITIONS AND PHYSICAL CAPABILITY

Reviewed 2025-11-05

- Limitations in physical capability may result from a variety of medical conditions, including:
- Excessively high or low body mass, including obesity
- Markedly reduced muscle mass
- Musculoskeletal disorders, pain, or restricted mobility
- Post-traumatic or post-surgical conditions
- Pulmonary disease
- Cardiovascular disease
- Neurological disorders

20.4 PHYSICAL CAPABILITY ASSESSMENT

Reviewed 2025-11-05

Physical capability testing shall be conducted when clinically indicated, for example due to the presence of one of the aforementioned medical conditions or other concerns regarding an individual's physical abilities. The specific aspects to be assessed will depend on the underlying reason for the evaluation.

Table B-I/9 of the STCW Convention provides guidance on the physical abilities required for various shipboard functions (see above). The following approaches may be employed to determine whether the relevant requirements are met:

- Direct observation of the individual's ability to perform routine and emergency duties safely and effectively
- Simulation of tasks representative of normal and emergency shipboard duties
- Assessment of cardiorespiratory reserve, including spirometry and ergometric testing. These methods help estimate maximum exercise capacity and, by extension, the seafarer's ability to undertake physically demanding work. A substantial reserve also suggests that cardiac and pulmonary function is less likely to deteriorate during the validity period of the medical certificate. The benchmark test is measurement of maximum oxygen uptake (VO_2 max) [55], although this requires specialised equipment. Simpler screening alternatives include step tests such as the Chester [56] [57] or Harvard protocols [58] are simpler alternatives that may be used for screening Abnormal results from step tests should be confirmed by VO_2 max testing or treadmill-based stress tests.
- Informal assessment of cardiorespiratory reserve, for example by stair climbing (three to six flights) with evaluation of symptoms such as breathlessness, distress, and recovery rate (e.g. pulse rate declines post-exertion). Although not standardised across practitioners, this method may be useful for repeated assessments by the same medical examiner
- Clinical evaluation of strength, mobility, coordination, and related physical functions

Additional insight may be gained from activities recently or routinely undertaken by the seafarer, including:

- Performance of physically demanding duties on board (e.g. lifting heavy equipment, handling mooring gear)

[55] Hem Erlend and Leirstein Svein: Testing av utholdenhet. http://olympiatoppen.no/fag/utholdenhet/testlaboratoriet/tester/media3223.media

[56] Sykes K, Roberts A: The Chester step test – a simple yet effective tool for the prediction of aerobic capacity. Physioterapy 90 (2004) 183-188

[57] Watkins J: Step tests of cardiorespiratory fitness suitable for mass testing. Br J. Sports Med 1984 June; 18(2): 84-89

[58] Ryhming I. A modified Harvard step test for the evaluation of physical fitness. Arbeitsphysiologie. 1953;15(3):235–250.

- Participation in physically intensive training courses (e.g. firefighting, helicopter escape, STCW basic safety training)
- A documented personal pattern of regular physical exercise
- Informal testing of cardiorespiratory reserve could be performed, for instance climbing stairs (three to six flights of stairs) and assessing any distress, shortness of breath and similar, plus the speed of pulse rate decline on stopping. This is not readily reproducible between practitioners but can be used for repeat assessment by the same medical practitioner.
- Clinical assessment of strength, mobility, coordination, etc.

Additional information may come from activities recently or regularly undertaken, as described by the seafarer, such as

- physically demanding duties on the vessel (carrying heavy items, handling mooring equipment, etc.)
- attendance at a physically demanding course, e.g. firefighting, helicopter escape, STCW basic training or similar; and
- a confirmed personal pattern of regular exercise.

Where a case is submitted for review by the appellate body, it is essential that the physical capability testing is conducted in an objective and reproducible manner, thereby enabling the appellate body to assess the case independently.

20.5 INTERPRETATION OF RESULTS

Reviewed 2021-11-05

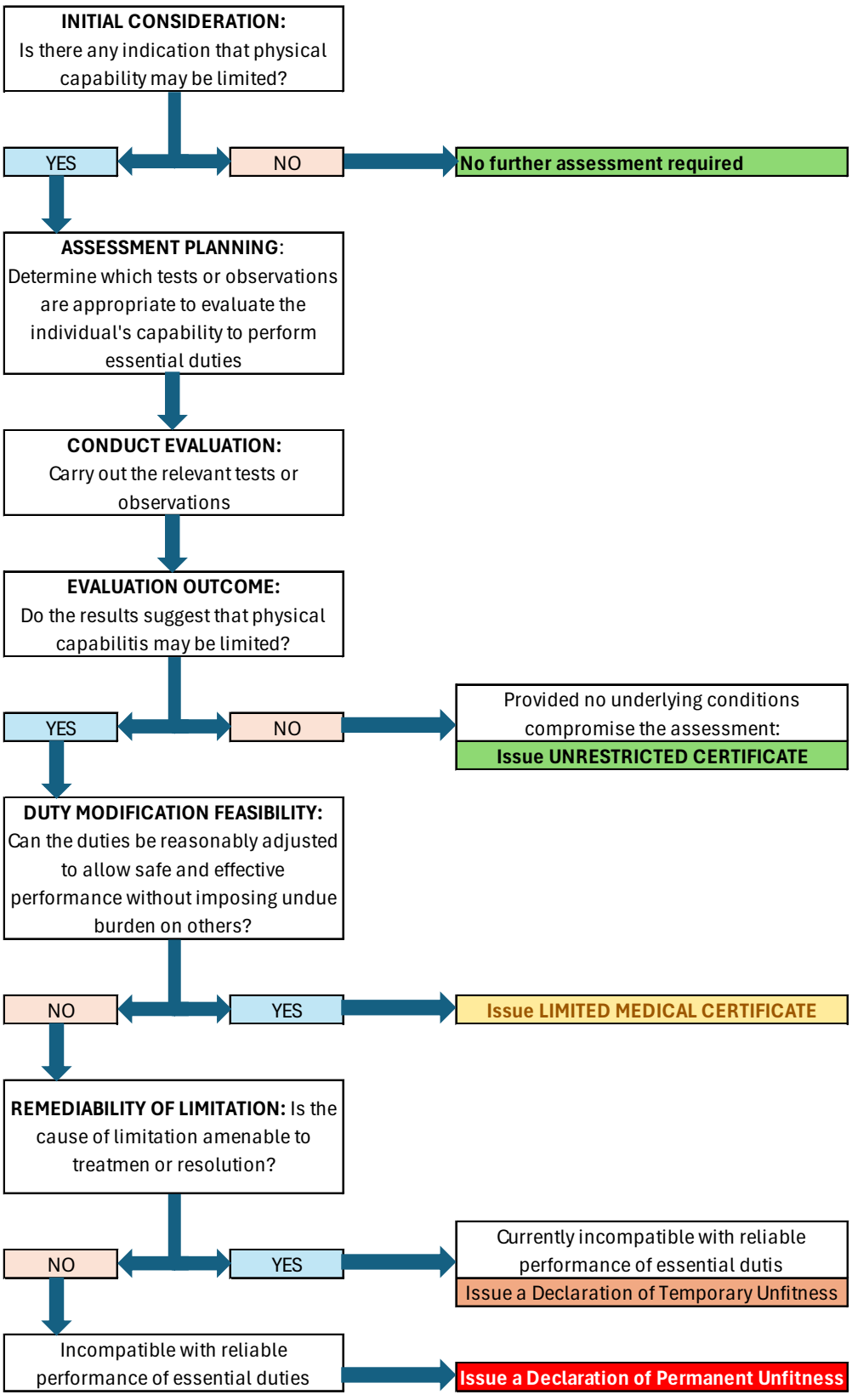
The following considerations should be included when assessing physical capability:

- Is there any evidence that the individual is unable to perform routine and emergency duties safely and effectively?
- Are there any observed limitations in strength, flexibility, stamina, or coordination?
- What are the results of any cardiorespiratory reserve tests?
- Was test performance limited by shortness of breath, musculoskeletal or other pain, or exhaustion? Such findings must be investigated and taken into account when determining physical capability
- Was the individual unable to complete the test?
- Was the test completed, but with signs of cardiovascular or respiratory strain, or with delayed recovery?
- Was the test completed to a good or average standard?

Discuss the individual's subjective experience during the test and review their reported fitness and functional capacity during routine duties and emergency drills (e.g. man-overboard or lifeboat drills). Where performance at work is uncertain, seek corroboration from colleagues or supervisors.

20.6 DECISION-MAKING

Reviewed 2025-11-05



21 USE OF MEDICATION

21.1 INTRODUCTION

Reviewed 2025-11-07

Medication may play a significant role in enabling seafarers to continue working at sea. However, certain medicinal products are associated with adverse effects that may impair the safe and effective performance of duties. Additionally, some treatments may present complications that increase the risk of illness while at sea.

This guidance pertains specifically to the ongoing use of prescribed medication.

The administration of oral medication at sea may be compromised by nausea and vomiting. If such medication is discontinued — whether due to gastrointestinal symptoms or other factors — its protective effect may be lost, potentially resulting in illness (e.g. in cases involving epilepsy, hormonal therapy, etc.).

It is incumbent upon the seafarer's doctor to evaluate both the known adverse effects of each prescribed medication and the individual's specific response to it.

Where medication is clinically essential for the effective management of a medical condition — such as insulin, anticoagulants, or psychopharmaceutical agents — it is hazardous to discontinue treatment in an attempt to meet fitness requirements for sea service.

21.2 RESTRICTED MEDICINES - AND OTHER MEDICINES

Reviewed 2025-11-05

Medicines classified under Norwegian prescription groups A (narcotics and central nervous system stimulants) and B (tranquillisers and other substances with addictive potential) are not referenced in the current regulations of 2014. This revision does not, however, diminish the importance of evaluating such medicines with the same rigour as under earlier regulations. On the contrary, it underscores the necessity of considering the potential adverse effects of a broader range of medicinal products — such as drowsiness, impaired alertness, diminished concentration, and mood alterations, among others.

The seafarer's doctor is required to assess the safety implications of regular medication use in all cases, irrespective of whether the medicines are administered daily or on an as-needed basis during service aboard ship.

In every such instance, the individual must carry a certificate issued by the seafarer's doctor confirming that the medication has been evaluated and that its use is authorised during active duty. Risk assessment for medical fitness shall include consideration of the effects and implications of any prescribed medication.

The ***Declaration from Seafarer's Doctor regarding use of regular medicines (Form Number KS-0420)*** is developed for this purpose. It can be downloaded from the NMA's website. This form shall be issued in all cases where the seafarer uses medicines on a regular basis or on an as-needed basis.

21.3 RISK ASSESSMENT IN PERSONS USING MEDICATION

Reviewed 2025-11-07

It is not uncommon for the seafarer's doctor to place greater emphasis on the medication being used than on the underlying medical condition for which it is prescribed. For example, attention may be directed more towards the use of methylphenidate than towards the diagnosis of Attention Deficit Hyperactivity Disorder (ADHD), or more towards antidepressant therapy than the underlying depressive disorder.

When evaluating individuals who are prescribed medication, three key factors must be assessed:

1) Functional Capacity in Safety-Critical Domains without Medication
   a) Demonstrates the necessity of pharmacological intervention
   b) Highlights the potential consequences should the medication become unavailable during service aboard ship

2) Functional Capacity in Safety-Critical Domains with Medication
   a) Further substantiates the need for continued pharmacological management

3) The Medication Itself, Including Consideration of:
   a) Known adverse effects
   b) Risk of medical complications
   c) Potential for misuse or dependency
   d) Requirements for secure storage and controlled distribution on board
   e) Feasibility of replenishment during service
   f) Legal status in other jurisdictions, including customs and border control regulations
      i) Certain medications may be prohibited in specific countries
      ii) Possession may, in some cases, constitute a legal offence

Functions that are particularly susceptible to safety-critical impairment due to medication include concentration, alertness and vigilance, reaction time, impulse control, and emotional stability.

21.4 ISSUANCE OF DECLARATION REGARDING USE OF PRESCRIBED MEDICATION

Reviewed 2025-11-07

The seafarer's doctor shall ensure that the individual is provided with written documentation detailing the use of any prescribed medication. This documentation must be suitable for presentation to any official who may question the presence of such medication on board. Particular attention shall be given to medications that are legally prescribed controlled substances—namely those classified under Norwegian prescription groups A and B—or any medicinal products with potential for misuse.

All seafarers who are deemed fit following medical examination and who are prescribed medication shall be issued a declaration by the seafarer's doctor. This declaration shall include:

- The name of the medicine;
- The prescribed dosage; and
- Confirmation that authorisation has been granted for the use of the medication while on duty aboard ship.

Below is the declaration form to be completed by the seafarer's doctor for all individuals using prescribed medication on a regular basis.

Sjøfartsdirektoratet
Norwegian Maritime Authority

Erklæring fra sjøfartslege om bruk av faste medikamenter/
Declaration from the Seafarer's Doctor regarding use of regular medicines

Arbeidstaker/*Employee*	
Etternavn/*Family name*	Fødselsdato/*Date of birth*
For- og mellomnavn/*First and middle name*	Stilling/*Position*

Nevnte arbeidstaker har fått helseerklæring for arbeid på norske skip og flyttbare innretninger / *The above mentioned employee has got a medical certificate for work on board Norwegian ships and offshore mobile units*

Helseerklæring nr/*Medical Certificate No*	Utløpsdato/*Expiry date*

Jeg har vurdert eventuell sikkerhetsrisiko knyttet til bruk av nedenstående medikamenter under utførelse av tjenesten om bord / *I have considered the possible safety risk related to the use of the below mentioned medicines whilst on duty.*

Preparat/*Preparation*	Substans/*Substance*	Dosering/*Dosage*

Jeg bekrefter at medikamentene tillates brukt under utførelsen av tjenesten om bord og ikke vil utgjøre noen sikkerhetsrisiko / *I confirm that the medicines are allowed during work on board, and do not imply a safety risk.*

Dato/*Date*	Sjøfartslegens navn/*Name of seafarers' doctor*	Sjøfartslegens signatur/*Signature of seafarers' doctor*

21.5 SHORT-TERM TREATMENT WITH MEDICATION

Reviewed 2025-11-07

As a general rule, medicinal treatment for non-chronic conditions shall be completed prior to the issuance of a medical certificate.

The use of such medication does not fall within the scope of the requirement for a declaration concerning prescribed medication.

It is the responsibility of the company and the master to ensure that appropriate procedures are in place to manage short-term treatment and the use of over-the-counter medicinal products.

21.6 MEDICATIONS THAT MAY IMPAIR ROUTINE AND EMERGENCY DUTIES

Reviewed 2025-11-07

The following categories of medication may adversely affect a seafarer's ability to perform routine and emergency duties safely and effectively:

- Medicines affecting central nervous system function, including but not limited to: hypnotics (sleeping tablets), antipsychotics, certain analgesics, anxiolytics, antidepressants, anti-epileptic agents, and antihistamines.

- Medicines associated with an increased risk of sudden incapacitation, such as insulin, certain older antihypertensive agents, and medications known to lower the seizure threshold.

- Medicines that may impair visual function, including agents such as hyoscine and atropine. (A search of the "Felleskatalogen" — the Norwegian equivalent of the Physicians' Desk Reference —identified over 190 product monographs listing visual impairment as a potential adverse effect.)[59].

21.7 MEDICATIONS THAT MAY HAVE SERIOUS ADVERSE CONSEQUENCES

Reviewed 2025-11-07

Certain medications may pose significant risks to health and safety in the maritime environment. These include:

- **Medicines associated with excessive or spontaneous bleeding**, such as warfarin. An individualised assessment of bleeding risk is required. Anticoagulants including warfarin and dicoumarin are generally considered incompatible with sea service due to their complication profile. However, if coagulation parameters are stable and subject to close monitoring, duties that do not entail elevated risk of injury and are within reach of helicopter-based medical evacuation may be considered.

- **Medicines where abrupt cessation may result in serious health consequences**, including hormonal therapies, insulin, anti-epileptic agents, antihypertensives, and oral antidiabetic drugs.

[59] www.felleskatalogen.no searched 10.09.2013

- **Antibiotics and other anti-infective agents**, particularly where recurrent or chronic infections are anticipated.

- **Anti-metabolites and other oncological treatments**, which may compromise immune function or cause systemic side effects.

- **Medicines supplied for use at the individual's discretion**, such as asthma inhalers or antibiotics intended for self-administration in the event of recurrent illness.

21.8 MEDICATIONS REQUIRING LIMITATION OF PERIOD OF SEA SERVICE DUE TO SURVEILLANCE REQUIREMENTS

Reviewed 2025-11-07

A broad range of medicinal agents — including anti-diabetic treatments, antihypertensive therapies, and hormone replacement regimens — may necessitate close clinical monitoring by a medical practitioner or specialist. As such, their use may render the individual temporarily incompatible with service at sea.

21.9 ISSUE OF MEDICAL CERTIFICATES IN THE EVENT OF MEDICATION USE

Reviewed 2025-11-05

The seafarer's doctor shall base their decision on reliable and comprehensive information concerning the individual's use of medication, known side effects, the underlying medical condition, and the necessity of treatment. The assessment must be conducted following a personal clinical examination of the individual.

Declaration of Unfitness
The use of medication is deemed incompatible with the reliable performance of routine and emergency duties — safely and effectively — if any of the following apply:

- There is a risk of life-threatening consequences should the medication not be taken as prescribed;
- There is a risk of cognitive impairment when the medication is taken as prescribed;
- There is a risk of severe adverse effects that may pose a danger at sea (e.g. increased bleeding risk associated with anticoagulants).

Medical Certificate with Restriction
May be issued where adverse effects are possible but develop gradually over time. In such cases, duties in near-coastal waters may be considered acceptable.

Medical Certificate with Time Limitation
May be issued where the effectiveness of the medication or the emergence of side effects requires clinical surveillance more frequently than the standard validity period of a medical certificate.

Medical Certificate Without Limitations
May be issued where there are no impairing side effects, no requirement for regular surveillance, and no risk of life-threatening consequences if the medication is not taken.

21.10 ANTITHROMBOTIC THERAPY: SAFETY CONSIDERATIONS AND REGULATORY INTERPRETATION

Reviewed 2025-11-07

The primary safety concern associated with antithrombotic therapy pertains either to an increased risk of bleeding or to the failure to adequately mitigate the thrombotic risk posed by the underlying medical condition.

In general, newer antithrombotic agents are considered to carry a bleeding risk comparable to that of warfarin, and the same principles of risk assessment apply. It is generally not recommended that individuals undergoing antithrombotic treatment — excluding acetylsalicylic acid (ASA) — serve in roles where they may be exposed to trauma or an elevated risk of bleeding, or where they are beyond the reach of helicopter-based medical evacuation.

There has been some confusion regarding the use of the term anticoagulant in regulatory guidance. Strictly defined, an anticoagulant is a pharmacological agent that inhibits blood coagulation and thereby prevents thrombus formation. However, certain antithrombotic agents — such as antiplatelet drugs, which reduce platelet aggregation — serve the same therapeutic purpose but are not typically classified as anticoagulants.

Antithrombotic agents encompass three main categories:

- Antiplatelet drugs
- Anticoagulants
- Thrombolytic agents

According to the Anatomical Therapeutic Chemical (ATC) classification system, these agents are grouped under various subcategories, including:

- Vitamin K antagonists
- Heparins
- Platelet aggregation inhibitors
- Enzymes
- Direct thrombin inhibitors
- Direct Factor Xa inhibitors
- Other antithrombotic agents

Historically, the distinction between these categories was less clearly defined, and the term anticoagulant has often been used interchangeably with antithrombotic in both regulatory and clinical contexts. This usage is reflected in official documents issued by authorities and professional bodies, where anticoagulation may refer to treatment involving either antiplatelet or anticoagulant agents.

In Norwegian public-facing documents, the term blood-thinning agents or blood-thinners is frequently employed. These terms are misleading, as none of the agents in question actually reduce blood viscosity.

Given the similarities in therapeutic indication and bleeding risk, it is reasonable to assess newer antithrombotic agents in alignment with the standards applied to warfarin. The sole exception in the regulations is ASA, which is generally considered to carry a lower risk of bleeding. However, newer agents appear to carry a lower risk than warfarin, albeit not as low as that associated with ASA. Accordingly, the term anticoagulant as used in current regulations and guidance should be interpreted as encompassing all antithrombotic agents, with the exception of ASA.

It should be noted that emerging scientific evidence may prompt future revisions of these standards, particularly if newer studies demonstrate a lower bleeding risk than is presently understood.

Direct oral anticoagulants (DOACs) with a bleeding risk profile and follow-up requirements comparable to those of acetylsalicylic acid (ASA) should be considered equivalent to ASA with respect to regulatory requirements for the medical certification of seafarers.

21.10.1 ACETYLSALISYLIC ACID (ASA)

Reviewed 2025-11-07

ASA blocks COX-1 in platelets, preventing the formation of thromboxane A_2, a substance that promotes platelet aggregation and vasoconstriction.

Since platelets lack a nucleus, they cannot regenerate COX-1, making the inhibition irreversible for the lifespan of the platelet (7–10 days).

This is the basis for ASA's use in preventing arterial thrombosis, such as heart attacks and strokes. The principal adverse effect associated with acetylsalicylic acid (ASA) therapy is an increased risk of bleeding, primarily from the gastrointestinal (GI) tract, and — albeit rarely — from intracranial vessels. Meta-analyses of randomised controlled trials have demonstrated that five years of treatment with 325 mg ASA daily results in an absolute increase in GI bleeding risk of approximately one percent compared to placebo (2.47% versus 1.42% at an average of 28 months, and 1.3% versus 0.5% at variable follow-up) [60] [61] [62].

Indirect comparisons from the global meta-analysis conducted by the Antithrombotic Trialists' Collaboration revealed no significant differences in the risk of major extracranial bleeding between 75 mg and 325 mg ASA, based on data from three individual randomized trials [63].

While the relative risk of severe bleeding during ASA therapy is increased by approximately 70% [64] compared to placebo, the absolute increase in risk remains modest.

In certain cases, ASA therapy must be continued even in individuals who have experienced gastric haemorrhage or peptic ulceration. It is common clinical practice to recommend co-administration of proton-pump inhibitors (PPIs) for the duration of ASA therapy, including lifelong use were indicated [65].

A study examining the impact of PPIs in patients with ulcer complications during long-term ASA therapy demonstrated a reduction in recurrence risk from 14.8% to 1.6% [66].

Discontinuation of ASA therapy in the context of cardiovascular or cerebrovascular disease carries a substantial risk and is generally not justifiable. In a study by Sung et al. (2010), total mortality after

[60] UpToDate: Benefits and risks of aspirin in secondary and primary prevention of cardiovascular disease, accessed 15. July 2014
[61] Derry S, Loke YK. Risk of gastrointestinal haemorrhage with long term use of aspirin: meta-analysis. BMJ 2000; 321:1183.
[62] Weisman SM, Graham DY. Evaluation of the benefits and risks of low-dose aspirin in the secondary prevention of cardiovascular and cerebrovascular events. Arch Intern Med 2002; 162:2197.
[63] Antithrombotic Trialists' Collaboration. Collaborative meta-analysis of randomised trials of antiplatelet therapy for prevention of death, myocardial infarction, and stroke in high risk patients. BMJ 2002; 324:71.
[64] McQuaid KR og Laine L (Systematic review and meta-analysis of adverse events of low-dose aspirin and clopidogrel in randomized controlled trials, Am J Med. 2006;119(8):624)
[65] Yeomans ND, Tulassay Z, Juhász L, Rácz I, Howard JM, van Rensburg CJ, Swannell AJ, Hawkey CJ: A comparison of omeprazole with ranitidine for ulcers associated with nonsteroidal antiinflammatory drugs. Acid Suppression Trial: Ranitidine versus Omeprazole for NSAID-associated Ulcer Treatment (ASTRONAUT) Study Group. N Engl J Med. 1998;338(11):719.
[66] Lai KC, Lam SK, Chu KM, Wong BC, Hui WM, Hu WH, Lau GK, Wong WM, Yuen MF, Chan AO, Lai CL, Wong J: Lansoprazole for the prevention of recurrences of ulcer complications from long-term low-dose aspirin use. N Engl J Med. 2002;346(26):2033

eight weeks was significantly lower in the ASA group (1.3%) compared to the placebo group (12.9%) [67], although the study was relatively small and utilised low-dose ASA (80 mg).

Long-term ASA therapy following minor stroke (e.g. transient ischaemic attack [TIA] or reversible ischaemic neurological deficit [RIND]) is associated with a reduction in total vascular mortality of approximately 15%, and a reduction in non-fatal cerebrovascular and myocardial infarction of approximately 30%. ASA therapy also contributes to reduced rates of reocclusion following aortocoronary bypass surgery [68].

Estimated annual bleeding risk with ASA

- General population (low-risk individuals):
  - Major bleeding risk: Approximately 0.3% to 0.5% per year
  - Gastrointestinal (GI) bleeding: Around 0.2% to 0.4% per year
- High-risk individuals (e.g., older age, history of ulcers, concurrent anticoagulants):
  - Major bleeding risk: Can rise to 1.0% or more per year
  - GI bleeding: May exceed 0.6% per year, especially in those with cardiometabolic comorbidities [69]
- Patients using ASA for secondary prevention (e.g., post-MI or stroke):
  - Bleeding risk is generally accepted due to cardiovascular benefit, but still ranges 0.5%–1.0% annually, depending on age and comorbidities [70]
- Combination therapy (ASA + oral anticoagulants):
  - Significantly higher bleeding risk, often 2–3 times greater than ASA alone [71]
  - See also section on Dipyridamole below regarding the combination of ASA and dipyridamole.
- Key risk factors that increase bleeding:
  - Age > 70 years
  - History of peptic ulcer or GI bleeding
  - Uncontrolled hypertension
  - Renal or hepatic impairment

Note: Direct oral anticoagulants (DOACs) with a bleeding risk profile and follow-up requirements comparable to those of acetylsalicylic acid (ASA) should be considered equivalent to ASA with respect to regulatory requirements for the medical certification of seafarers.

[67] Sung JJ, Lau JY, Ching JY, Wu JC, Lee YT, Chiu PW, Leung VK, Wong VW, Chan FK: Continuation of low-dose aspirin therapy in peptic ulcer bleeding: a randomized trial. Ann Intern Med. 2010;152(1):1.
[68] http://legemiddelhandboka.no/Legemidler/74869/?ids=74870#i74870
[69] Zurowska A: Higher Cardiometabolic Risk Increases Gastrointestinal Bleeding in Aspirin Users. Eur Med Journ 16.=ct 2025.
[70] Liang C, Wanling L, Maofeng W. LASSO-derived model for the prediction of bleeding in aspirin users. Nature (2024) 14:12507. https://doi.org/10.1038/s41598-024-63437-6.
[71] Ghule P, Panic J, Malone DC. Risk of bleeding with concomitant use of oral anticoagulants and aspirin: A systematic review and meta-analysis. AM J Health-Sys Pharm. Vol 81, Issue 12, 15 June 2024, Pages 494-508

21.10.2 DIPYRIDAMOL (APONOVA®, PERSANTIN®)

Reviewed 2025-11-11

Dipyridamol Inhibits the activity of adenosine deaminase and phosphodiesterase, which causes an accumulation of adenosine, adenine nucleotides, and cyclic AMP; these mediators then inhibit platelet aggregation and may cause vasodilation; may also stimulate release of prostacyclin or PGD2; causes coronary vasodilation.

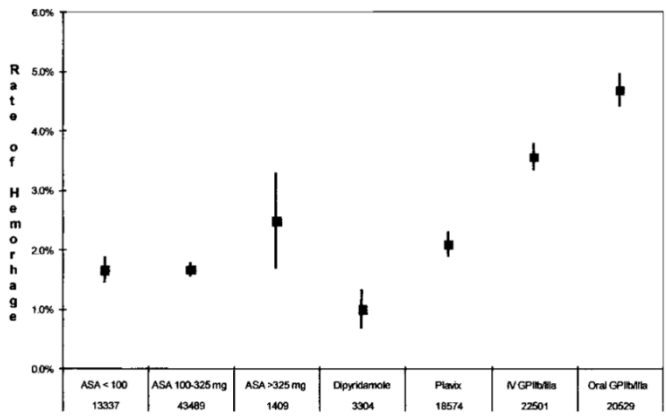


Fig. 1. Weighted combination of major bleeding events with 95% CI across treatment group.

In the ESPS-2 study, the incidence of bleeding complications associated with dipyridamol was comparable to placebo [72]. Furthermore, a meta-analysis encompassing 50 randomised controlled trials[73] demonstrated that dipyridamole was associated with a lower risk of bleeding than low-dose acetylsalicylic acid (ASA). Notably, the combination of low-dose ASA and dipyridamole emerged as the safest regimen for secondary stroke prevention.

Accordingly, dipyridamole — whether administered alone or in combination with low-dose ASA — should be regarded as equivalent to ASA when evaluating eligibility for medical certification.

21.10.3 WARFARIN (MAREVAN®)

Reviewed 2025-11-11

Evidence supporting the use of warfarin in the treatment of venous thromboembolism (VTE) is derived from older studies. In 1960, a study comparing warfarin therapy with observation in patients with acute deep vein thrombosis (DVT) demonstrated a dramatic reduction in recurrence: 0% in the warfarin group versus 26% in the observation group [74]. Subsequent research has primarily focused on comparing the efficacy of different durations of warfarin treatment. The greatest therapeutic effect is observed within the first few days to weeks.

The bleeding risk associated with warfarin was thoroughly investigated in a meta-analysis comprising 13 prospective cohort studies and 56 randomised trials involving patients treated for deep vein thrombosis (DVT). During the first three months of anticoagulant therapy, the incidence of major bleeding was found to be 1.6%, while fatal bleeding occurred in 0.2% of cases [75]. The overall incidence of any bleeding event is considerably higher, ranging between 5% and 15%, and is approximately

[72] Diener HC, Cunha L, Forbes C, et al. European Stroke Prevention Study. 2. Dipyridamole and acetylsalicylic acid in the secondary prevention of stroke. J Neurol Sci 1996; 143:1.
[73] Serebruany VL et al. Risk of Bleeding Complications With AntiplateletAgents: Meta-Analysis of 338,191 Patients Enrolledin 50 Randomized Controlled Trials. Am J Hematol 2004; 75:40-47
[74] Barrit DW, Jordan SC. Anticoagulant drugs in the treatment of pulmonary embolism. A controlled trial. Lancet 1960; 1:1309.
[75] Carrier M, Le Gal G, Wells PS, Rodger MA. Systematic review: case-fatality rates of recurrent venous thromboembolism and major bleeding events among patients treated for venous thromboembolism. Ann Intern Med 2010; 152:578.

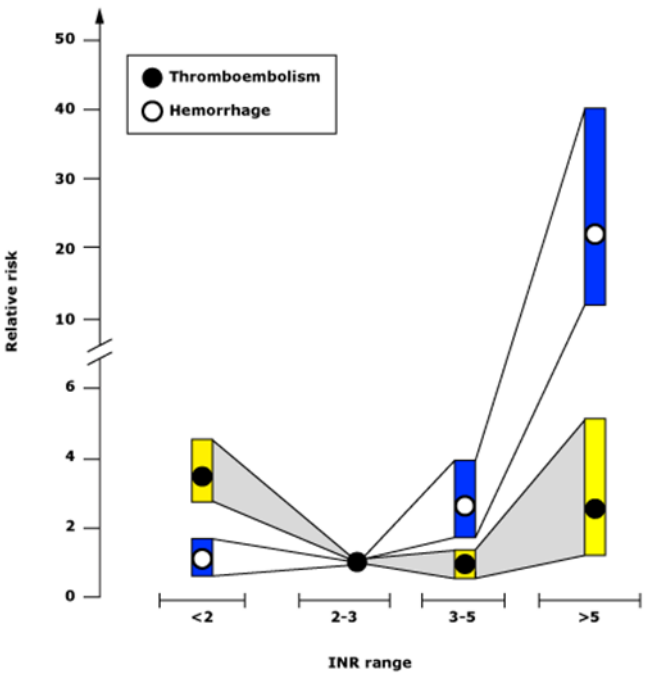
doubled with concomitant use of non-steroidal anti-inflammatory drugs (NSAIDs) (hazard ratio 2.37) or acetylsalicylic acid (hazard ratio 1.50) [76].

The **HAS-BLED score** may be used to assess bleeding risk:

Risk factor	Points
Hypertension	1
Impaired liver function	1
Impaired renal function	1
History of stroke	1
Bleeding tendency or predisposition	1
Age > 65 years	1
Concomitant use of antiplatelet agents	1
Excessive alcohol consumption	1

	Score	Bleeding events per 100 patient-years
	0	1.13
	1	1.02
	2	1.88
	3	1.74
	5-9	Insufficient data

The HAS-BLED score has been validated only in patients with atrial fibrillation receiving warfarin. For further details and comparative performance of bleeding risk scores relative to clinical judgement, refer to the relevant topics on anticoagulation in atrial fibrillation and on specific anticoagulant agents.



This figure illustrates the relative risks and corresponding 95 percent confidence intervals for thromboembolic events (depicted as closed circles with yellow confidence intervals) and haemorrhagic events (open circles with blue confidence intervals) across varying international normalised ratio (INR) ranges in patients receiving oral anticoagulant therapy. The reference category for both outcomes is an INR range of 2.0 to 3.0, corresponding to a relative risk of 1.0. Notably, the risk of haemorrhage predominates at INR values exceeding 3.0, whereas the risk of thromboembolism is more pronounced at INR values below 2.0.

Relative risk for thromboembolism and haemorrhage.

[76] Davidson BL, Verheijen S, Lensing AW, et al. Bleeding risk of patients with acute venous thromboembolism taking nonsteroidal anti-inflammatory drugs or aspirin. JAMA Intern Med 2014; 174:947.

Treatment with warfarin carries a safety risk in maritime settings due to its potential to cause bleeding. Intracerebral haemorrhage accounts for approximately 90% of deaths and the majority of permanent disability associated with warfarin-related bleeding [77].
The risk of intracranial haemorrhage (ICH) increases two- to five-fold with warfarin therapy, depending on dosage [78] [79] [80].

However, assessing bleeding risk in an individual patient is challenging, as it is influenced by multiple concurrent factors. In low-risk groups, the cumulative bleeding risk over a four-year period is approximately 3%, whereas in high-risk groups it may exceed 50% [81].

The most severe haemorrhages typically originate from the gastrointestinal tract, while approximately 15% are intracranial. This poses a particular hazard at sea, where not only the volume of blood loss is critical, but also the absence of compensatory intracranial space means that even minor bleeds may have serious consequences. Such events often necessitate urgent hospital-based intervention, which may not be feasible when distant from shore.

21.10.4 DABIGATRAN (PRADAXA®) – DIRECT THROMBIN (IIA) INHIBITOR

Reviewed 2025-11-11

In the RE-COVER I study, 2,539 patients with acute venous thromboembolism (VTE) were treated for six months with either dabigatran or warfarin [82]. Dabigatran demonstrated similar rates of recurrent VTE and VTE-related mortality (2.4% versus 2.1%), VTE-related deaths (0.1% versus 0.2%), major bleeding (1.6% versus 1.9%), and overall bleeding events (16.1% versus 21.9%). The safety and efficacy of dabigatran therapy therefore appear comparable to those of warfarin. Similar findings were reported in the RE-COVER II study [83] and in a pooled analysis of RE-COVER I and II [84]. The efficacy of dabigatran also appears to extend to the treatment of thrombophilia and antiphospholipid syndrome [85]. However, one study reported a higher number of bleeding events (4,270 versus 827) and fatal haemorrhages (638 versus 44) with dabigatran compared to warfarin [86].

Although dabigatran, rivaroxaban, and apixaban are promising agents for stroke prevention in atrial fibrillation, it is important to point out that there are no specific antidotes to reverse their anticoagulant effects. In addition, these agents are not used in patients with mechanical heart valves because the RE-ALIGN trial comparing dabigatran with warfarin found that dabigatran was associated with more ischemic strokes and more wound bleeding than warfarin[87].

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[77] Fang MC, Go AS, Chang Y, et al. Death and disability from warfarin-associated intracranial and extracranial hemorrhages. Am J Med 2007; 120:700.
[78] Rosand J, Eckman MH, Knudsen KA, et al. The effect of warfarin and intensity of anticoagulation on outcome of intracerebral hemorrhage. Arch Intern Med 2004; 164:880.
[79] Hart RG, Tonarelli SB, Pearce LA. Avoiding central nervous system bleeding during antithrombotic therapy: recent data and ideas. Stroke 2005; 36:1588.
[80] García-Rodríguez LA, Gaist D, Morton J, et al. Antithrombotic drugs and risk of hemorrhagic stroke in the general population. Neurology 2013; 81:566.
[81] Outpatient bleeding risk index
[82] Schulman S, Kearon C, Kakkar AK, et al. Dabigatran versus warfarin in the treatment of acute venous thromboembolism. N Engl J Med 2009; 361:2342.
[83] Schulman S, Kakkar AK, Goldhaber SZ, et al. Treatment of acute venous thromboembolism with dabigatran or warfarin and pooled analysis. Circulation 2014; 129:764.
[84] Goldhaber SZ, Schellong S, Kakkar A, et al. Treatment of acute pulmonary embolism with dabigatran versus warfarin. A pooled analysis of data from RE-COVER and RE-COVER II. Thromb Haemost 2016; 116:714.
[85] Goldhaber SZ, Eriksson H, Kakkar A, et al. Efficacy of dabigatran versus warfarin in patients with acute venous thromboembolism in the presence of thrombophilia: Findings from RE-COVER®, RE-COVER™ II, and RE-MEDY™. Vasc Med 2016; 21:506.
[86] McConeghy K, Bress A, Wing C. Reports of bleeding-related fatalities with dabigatran and warfarin: An analysis using the Food and Drug Administration adverse events reporting system. J Am Coll Cardiol 2013; 61.
[87] Eikelboom JW, Connolly SJ, Brueckmann M, et al. Dabigatran versus warfarin in patients with mechanical heart valves. N Engl J Med 2013; 369:1206.

Rivaroxaban and apixaban have not been compared with warfarin in patients with prosthetic heart valves.
There are great differences between the centres participating in the RE-LY study regarding how long the patients had been in therapeutic range (TTR). In the best studies, showing TTR 72,5% or above, there is no difference between effect and complication risk between dabigatran and warfarin[88].

So far, there is no reason to believe that the safety risk is reduced in persons on ships by replacing warfarin therapy with newer oral antithrombotic agents. One may gain something on easier follow-up, but uncertainty regarding bleeding likelihood and the lack of antidotes implies that the new agents should be regarded as comparable to warfarin in the risk assessment.

21.10.5 RIVAROXABAN (XARELTO®, RIVAXA®) – FACTOR XA-INHIBITOR

Reviewed 2025-11-11

EINSTEIN-DVT and EINSTEIN-PE were open-label, randomised trials involving a total of 8,281 patients with acute deep vein thrombosis (DVT) or pulmonary embolism (PE). Rivaroxaban was found to be as effective as standard therapy with heparin followed by warfarin. In the DVT study, the incidence of recurrent DVT was 2.1% with rivaroxaban compared to 3.0% with standard therapy, while recurrent PE occurred in 2.1% versus 1.8%, respectively. The overall bleeding rate was 8.1% in both treatment arms. In the PE study, the total bleeding incidence was 10.3% with rivaroxaban versus 11.4% with heparin/warfarin [89] [90].

Evidence suggests that DOACs are less effective than warfarin for recurrent thrombosis prevention in patients with APS [91] [92] [93] [94] [95] [96] [97], especially in those with a history of arterial events. However, the use of DOACs may be reasonable in a few selected cases of APS, particularly among those who have features of lower-risk disease (single venous thrombosis and low-risk aPL profile) or those who cannot tolerate warfarin.

[88] Hansen J-B: Dokumentasjon for atrieflimmer og nye antikoagulantia, Indremedisineren 03:2012
[89] EINSTEIN Investigators, Bauersachs R, Berkowitz SD, et al. Oral rivaroxaban for symptomatic venous thromboembolism. N Engl J Med 2010; 363:2499.
[90] EINSTEIN–PE Investigators, Büller HR, Prins MH, et al. Oral rivaroxaban for the treatment of symptomatic pulmonary embolism. N Engl J Med 2012; 366:1287.
[91] Cohen H, Hunt BJ, Efthymiou M, et al. Rivaroxaban versus warfarin to treat patients with thrombotic antiphospholipid syndrome, with or without systemic lupus erythematosus (RAPS): a randomised, controlled, open-label, phase 2/3, non-inferiority trial. Lancet Haematol 2016; 3:e426.
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[97] Ordi-Ros J, Sáez-Comet L, Pérez-Conesa M, et al. Rivaroxaban Versus Vitamin K Antagonist in Antiphospholipid Syndrome: A Randomized Noninferiority Trial. Ann Intern Med 2019; 171:685.

21.10.6 APIXABAN (ELIQUIS®) – FACTOR XA-INHIBITOR

Reviewed 2025-11-11

In the AMPLIFY study, 5,395 patients receiving six months of treatment for venous thromboembolism (VTE), including deep vein thrombosis (DVT) and/or pulmonary embolism (PE), were evaluated. No significant difference was observed in the rate of recurrent VTE between the treatment groups (2.3% with apixaban versus 2.7% with conventional therapy). However, the incidence of bleeding was lower in the apixaban group (4.3% versus 9.7%) [98].

21.10.7 EDOXABAN (LIXIANA®) – FACTOR XA-INHIBITOR

Reviewed 2025-11-11

Compared with warfarin, edoxaban demonstrates a similar incidence of recurrent venous thromboembolism (VTE) or VTE-related death (3.2% versus 3.5%), and a lower rate of bleeding events (8.5% versus 10.3%) [99].

21.10.8 CLOPIDOGREL (PLAVIX®) – $P2Y_{12}$-INHIBITOR

Reviewed 2025-11-11

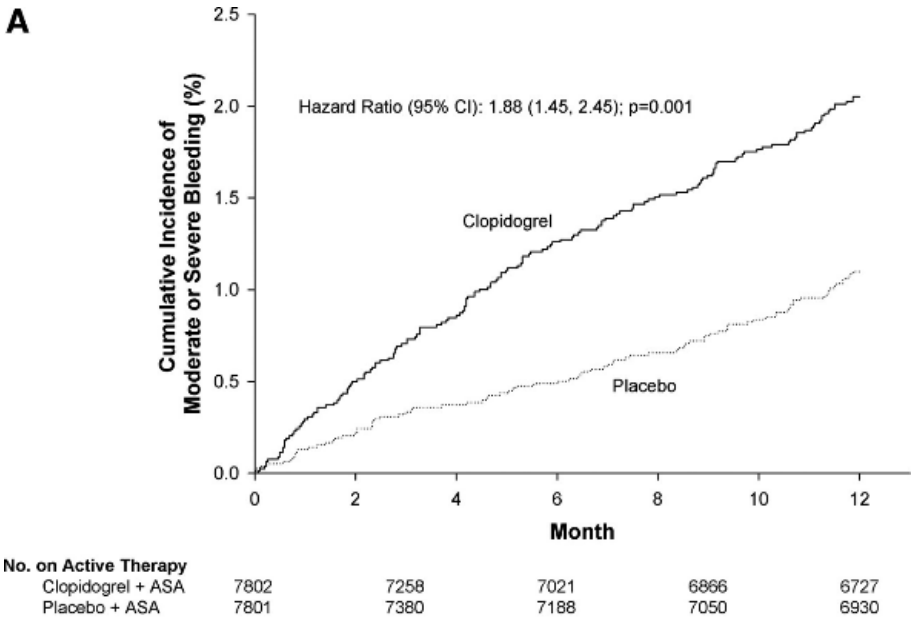
Among the 15,603 participants enrolled in the CHARISMA [100] trial, 487 individuals (3.1%) experienced bleeding complications over a median follow-up period of 28 months. Of these, 234 patients (1.5%) sustained severe bleeding events, 265 (1.7%) experienced moderately severe bleeding, and 12 patients were affected by both.

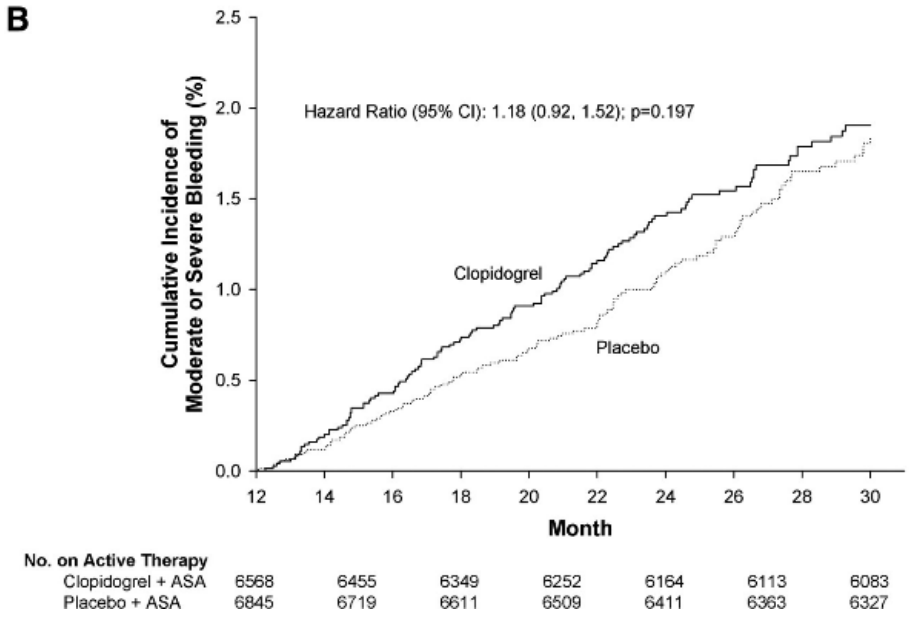
The incidence of severe bleeding was 1.7% in the clopidogrel arm compared with 1.3% in the placebo arm (hazard ratio [HR], 1.25; 95% confidence interval [CI], 0.97–1.62; P = 0.087). Moderate bleeding occurred in 2.1% of patients receiving clopidogrel versus 1.3% of those receiving placebo (P < 0.001).

The risk of moderate or severe bleeding associated with clopidogrel was highest during the first year of treatment, with rates of 2.0% compared to 1.1% in the placebo group (HR, 1.88; 95% CI, 1.45–2.45; P = 0.001). Beyond the first year, among patients who had not experienced moderate or severe bleeding during the initial year, the incidence of bleeding was comparable between the two treatment groups and remained stable throughout the remainder of the trial. The annualised bleeding rates were 0.9% in the clopidogrel group and 0.8% in the placebo group (HR, 1.18; 95% CI, 0.917–1.52; P = 0.197).

This temporal pattern of moderate or severe bleeding was illustrated in the Kaplan–Meier plots presented in the accompanying figure.

[98] Agnelli G, Buller HR, Cohen A, et al. Oral apixaban for the treatment of acute venous thromboembolism. N Engl J Med 2013; 369:799.
[99] Verhamme P, Wells PS, Segers A, et al. Dose reduction of edoxaban preserves efficacy and safety for the treatment of venous thromboembolism. An analysis of the randomised, double-blind HOKUSAI VTE trial. Thromb Haemost 2016; 116:747.
[100] Berger PB et al. Bleeding Complications With Dual Antiplatelet Therapy Among Patients With Stable Vascular Disease or Risk Factors for Vascular Disease: Results From the Clopidogrel for High Atherothrombotic Risk and Ischemic Stabilization, Management, and Avoidance (CHARISMA) Trial. Circulation 2010; 121:23.





21.10.9 TICAGRELOR (BRILIQUE®, TIKAGRELOR®) – P2Y12-INHIBITOR

Reviewed 2025-11-13

The bleeding risk of ticagrelor is slightly higher than clopidogrel, but lower than prasugrel in some studies. The major bleeding rates: approximately 4–6% annually in ACS patients [101].

[101] Bleeding risk greater with prasugrel versus clopidogrel and ticagrelor
Springer Nature link 2022; 1937:7 .

21.10.10 PRASUGREL (EFIENT®, PRASUGREL®) – P2Y12-INHIBITOR

Reviewed 2025-11-13

In a study by Wiciott et al of prasugrel vs. clopidogrel in patients with acute coronary syndromes, major bleeding was observed in 2.4% of patients receiving prasugrel and in 1.8% of patients receiving clopidogrel (hazard ratio, 1.32; 95% CI, 1.03 to 1.68; P=0.03). Also greater in the prasugrel group was the rate of life-threatening bleeding (1.4% vs. 0.9%; P=0.01), including nonfatal bleeding (1.1% vs. 0.9%; hazard ratio, 1.25; P=0.23) and fatal bleeding (0.4% vs. 0.1%; P=0.002) [102]. Bleeding rates of Prasugrel are approximately 5-7% annually

21.10.11 SELEXIPAG (UPTRAVI®) - SELECTIVE PROSTACYCLIN (IP) RECEPTOR AGONIST

Reviewed 2025-11-13

Selexipag (Uptravi) is not primarily associated with an increased risk of bleeding. Clinical trial data and prescribing information indicate that bleeding events are uncommon and typically mild in nature[103].

Accordingly, when assessing fitness to hold a medical certificate, Selexipag should be considered within a regulatory framework comparable to that applied to acetylsalicylic acid (ASA).

21.10.12 RISK FACTOR FOR BLEEDING WITH ANTICOAGULATION

Reviewed 2025-11-13

The risk of bleeding is influenced by a range of factors related to anticoagulant therapy as well as individual patient characteristics – cf. table below.
Certain factors are modifiable, including the selection of anticoagulant agent, dosing regimen, and concomitant use or avoidance of medications known to elevate bleeding risk. Others are non-modifiable, such as patient age and genetic predisposition. Additionally, some underlying medical conditions and comorbidities may be amenable to modification, whereas others remain fixed.

Risk factor	Odds ratio for bleeding
Modifiable risk factors	
Active peptic ulcer disease	4
Bleeding episode within the previous 3 months	4
Platelet count <50,000/microL	4
ICU or CCU	2.5
Chronic kidney disease (eGFR <30; 30 to 59; or ≥60 mL/min/m^2)	2; 1.5; 1
Liver disease (INR >1.5)	2
Active cancer	2
Rheumatologic disease	2
Central venous catheter	2
Fixed risk factors	
Male sex	1.5
Older age (≥85; 40 to 80; or <40 years)	3; 2; 1

[102] Wiviott, S. D., Braunwald, E., McCabe, C. H., Montalescot, G., Ruzyllo, W., Gottlieb, S., ... & Antman, E. M. (2007). Prasugrel versus clopidogrel in patients with acute coronary syndromes. New England Journal of Medicine, 357(20), 2001-2015.
[103] Duggan ST, Keam SJ , Burness CB. Selexipag: A Review in Pulmonary Arterial Hypertension.Adis Drug Evaluation 2017;17:73-80.

21.11 CNS STIMULANTS AND CNS DEPRESSANTS

Reviewed 2025-11-19

The use of central nervous system (CNS) stimulants for the treatment of attention deficit hyperactivity disorder (ADHD) in adults has increased over recent decades. Accordingly, seafarers' medical examiners must assess whether the use of such medication is justified during service on board ships.

In this context, it is essential to evaluate the individual's capability to perform their duties under two distinct conditions: both with and without the use of medication.

CNS stimulants are classified as controlled substances in most countries, with some jurisdictions enforcing particularly stringent regulations. Individuals may encounter difficulties in replenishing their medication and may face scrutiny from authorities who regard such substances as illicit drugs. Furthermore, there is a risk of theft, increasing the likelihood that the individual may be left without essential medication. This risk is generally higher for CNS stimulants than for many other types of medication.

It is therefore equally important to assess the underlying condition itself, the individual's functional status while on CNS stimulants, and the appropriateness of the medication's use.

Given the potential for abuse, misuse, and recreational use, the administration of CNS stimulants is not recommended in individuals with a known history of substance or alcohol dependence. Chronic misuse may lead to significant tolerance and psychological dependence, often accompanied by varying degrees of deviant behaviour. Psychotic symptoms may also occur, particularly in cases involving parenteral abuse.

These preparations are well known within drug-using communities, and it must be considered that individuals other than the patient may seek access to them. This necessitates secure and appropriate storage arrangements.

A thorough risk assessment must be conducted on a case-by-case basis, with findings clearly documented and recorded. If, following this assessment, the examining doctor deems the risk acceptable, a certificate may be issued confirming that the individual is permitted to use the medication while serving on board.

The table below [104] provides an overview of full blood concentrations of selected substances that produce clinical effects equivalent to various blood alcohol concentration levels.

[104] Bakke E, Bogstrand ST, Normann, PT, Ekeberg Ø, Bachs L: Influence of alcohol and other substances of abuse at the time of injury among patients in a Norwegian emergency department. BMC Emerg Med. 2016; 16: 20. PMCID: PMC4898304. PMID: 27277762. doi: 10.1186/s12873-016-0085-2.

Substances included, cut-off limits and concentration groups used to estimate degree of substance influence

Drugs	Cut off	1 point	2 points	4 points	6 points
Alcohol (ethanol) [a]	0.01	0.05-0.10	0.11-0.15	0.16-0.25	≥0.26
Illicit drugs					
Amphetamines [b]	4/4.5	70-270	271-554	555-1052	≥1053
Cannabis (tetrahydrocannabinol)	0.15	0.6-2.8	2.9-4.7	4.9-9.7	≥9.8
Cocaine	6	60-243	244-515	516-789	≥790
Medicinal drugs					
Alprazolam	5	15-46	47-97	98-147	≥148
Clonazepam	5	15-47	48-98	99-148	≥149
Codeine	3	90-286	287-603	604-920	≥921
Diazepam	29	85-313	314-654	655-996	≥997
Flunitrazepam	0.9	1.6-6	7-12	13-18	≥19
Methadone	30	123-433	434-896	897-1360	≥1361
Morphine	3	15-54	55-140	141-284	≥285
Nitrazepam	7	14-53	54-110	111-166	≥167
Oxazepam	143	583-1118	1119-2265	2266-3411	≥3412
Zolpidem	8	46-104	105-2012	213-430	≥431
Zopiclone	10	35-66	667-136	137-206	≥207

[a] Values given in %. All other values are calculated and rounded off from original micromolar values and given in ng/ml.

[b] Sum of amphetamine and/or noramphetamine

Table from Bakke E et al 2016, see footnote.

21.11.1 BENZODIAZEPINES

Reviewed 2025-11-19

Medicinal products with sedative properties may pose a significant risk to safety on board, as they can markedly impair reaction time, concentration, and alertness.

Studies have compared the effects of diazepam intake with blood alcohol concentration (BAC) in the context of driving performance. Findings indicate that a single dose of 15 mg diazepam may produce impairment equivalent to a BAC of 0.10%, particularly in individuals who are not habituated to its use. The cognitive and motor skills required for safe driving are, in many respects, comparable to those necessary for performing duties on board a vessel.

The sedative effects of such medication may persist for an extended period, depending on the specific pharmacological agent. A key factor is the drug's half-life—that is, the time required for the serum concentration to decrease by half. Medications with a long half-life are especially associated with an elevated risk of accidents due to prolonged residual effects.

Active ingredient	Trade Name	Half-life
Diazepam	Stesolid, Valium, Vival	20-100 hours
Oxazepam	Alopam, Sobril, Serenid-D	10-15 hours
Clonazepam	Klonazepam, Rivotril	20-60 hours
Nitrazepam	Apodorm, Mogadon	13-38 hours
Alprazolam	Xanor, Xanor Depot, Xanax	9-20 hours
Midazolam	Midazolam, Hypnovel	1.5-1.5 hours

A significant concern is that many individuals underestimate the extent to which they are affected by sedative medication. This misjudgement may compromise safety, particularly in operational environments such as ships.

The table below [105], adapted from guidance issued by the Norwegian Health Directorate, presents full blood concentrations of selected substances that produce clinical impairment equivalent to blood alcohol concentrations of 0.2‰, 0.5‰, and 1.2‰.

Allowing individuals to work on board ships while under the influence of such substances is analogous to permitting them to drive a motor vehicle under similar conditions. This comparison may serve as a useful rule of thumb when assessing fitness for duty in relation to alcohol or sedative medication.

Substance	Corresponding to 0,2 per mille (µmol/L full blood)	Corresponding to 0,5 per mille (µmol/L full blood)	Corresponding to 1,2 per mille (µmol/L full blood)
Benzodiazepines			
Alprazolam	0,01	0,02	0,05
Diazepam	0,2	0,5	1,2
Phenazepam	0,005	0,015	0,03
Flunitrazepam	0,005	0,01	0,025
Clonazepam	0,004	0,01	0,025
Nitrazepam	0,06	0,15	0,35
Oxazepam	0,6	1,5	3
Zolpidem	0,1	0,25	0,6
Zopiclone	0,03	0,06	0,15

Benzodiazepines will only on exceptional occasions be justified as a regular medicine. On these rare occasions it is necessary to judge the safety risk the use of the substance implies. As a general rule, such medicines are not in accordance with safe conduct of ordinary and emergency duties on board ships.

21.11.2 NON-BENZODIAZEPINE ANXIOLYTICS WITH SEDATIVE EFFECTS

Several non-benzodiazepine anxiolytics can affect alertness, attentiveness, or reaction time—though the degree varies widely depending on the substance, dosage, and individual sensitivity [106].

Substance	Class	Sedative potential	Notes
Hydroxyzine	First generation antihistamine	High	Strong sedative, impairs reaction time an alertness
Pregabalin	GABA analogue	Moderate to high	May cause dizziness, somnolence and slowed cognition
Gabapentin	GABA analogue	Moderate	Similar to pregabalin, used off-label for anxiety
Quetiapine (low dose)	Atypical antipsychotic	High	Often sedating even at low doses; used off-label for anxiety

[105] Fakta om rusmiddelgrenser i trafikken, http://www.fhi.no/tema/rusmidler/rusmiddelgrenser-i-trafikken - visited 16th July 2014
[106] Khan, S. How do nonbenzodiazepine anxiolytix work? RxList. ttps://www.rxlist.com/anxiolytics_nonbenzodiazepines/drug-class.htm. Visited 2025-11-19.

Trazodone	Serotonin antagonist/reuptake inhibitor	Moderate	Sedation common, used for anxiety and sleep
Mirtazapine	Noradrenergic and sertotonergic antidepressant	High	Strong sedative, especially at lower doses.

Anxiolytics like Buspirone and SSRIs/SNRIs are generally safer in terms of psychomotor performance, though individual responses vary.

22 COMMON MEDICAL CONDITIONS

22.1 INTRODUCTION

Reviewed 2025-11-19

It is not feasible to establish an exhaustive list of fitness criteria encompassing all medical conditions and the variations in their severity, symptomatology, prognosis, and treatment. However, the principles underpinning the approach adopted in the table below may often be extrapolated to conditions not explicitly covered. In such cases, an analogue assessment should be applied.

In all circumstances, the seafarer's doctor must determine whether the individual is medically and physically fit to perform both routine and emergency duties safely, reliably, and effectively.

The table of medical conditions is structured as follows:

Column 1: WHO International Classification of Diseases, 10. Edition (ICD-10). Codes are listed as an aid to collection and comparison of data for statistics and research purposes.
Column 2: The common name of the condition or group of conditions, with a brief statement on its relevance to work at sea.
Column 3: Description of conditions that are incompatible with work at sea. This column should be consulted first.
Column 4: Description of conditions that should entail a medical certificate with limitation or time limitation. This column should be consulted if the person does not fit the criteria in column 3.
Column 5: Description of conditions that are compatible with a medical certificate without limitations. This column should be consulted only when the person does not fit the criteria in columns 3 or 4.

For some conditions, one or more columns have been given the description "Not applicable". This is used where this type of medical certificate is either not relevant or not appropriate.
Terms used:

P: Permanent unfitness (red category)
T: Temporary unfitness (red category)
R: Medical certificate with restrictions in position or trade area (yellow category)
L: Medical certificate with restrictions in period of validity (yellow category)
H: Medical certificate without restrictions in position, trade area or validity (green category)

Unfitness means a condition which is incompatible with the reliable performance of routine and emergency duties safely and effectively.

22.2 INFECTIOUS AND PARASITIC DISEASES

22.2.1 GASTROINTESTINAL INFECTIONS

Reviewed 2025-11-19

A00–09	Gastrointestinal infection	T– If detected while onshore. (current symptoms or awaiting test results on carrier status); or confirmed carrier status until elimination demonstrated	Not applicable	**Non-catering personnel:** When satisfactorily treated **Catering personnel:** Medical certificate depends on individual medical assessment. Bacteriological clearance may be required.

Significance	Gastrointestinal infections encompass a broad range of conditions with varying severity and transmissibility. These conditions are of particular significance in the maritime environment because they may: • pose a risk of transmission to other crew members or passengers, especially in confined living and working spaces; • impair the affected individual's ability to perform duties safely and effectively due to symptoms such as vomiting, diarrhoea, fever, or dehydration; • recur, leading to unpredictable periods of incapacity; • compromise food safety when the affected individual is engaged in food preparation or handling.
Possible medical incident(s)	• Transmission of infection to other persons on board, potentially resulting in outbreaks. • Recurrence of symptoms in the affected individual, leading to sudden incapacity or inability to perform duties. • Acute deterioration, including dehydration or systemic illness, requiring medical intervention.
General likelihood	It is not possible to provide a single likelihood estimate for this diagnostic group due to the wide range of pathogens, modes of transmission, and clinical courses [Reference needed]. The likelihood of recurrence or transmission depends on: • the specific infectious agent; • the severity and duration of symptoms; • the individual's response to treatment; • specialist medical advice regarding carrier status or chronic shedding.
Consequences	• Minor infections: May cause short-term incapacity, requiring temporary removal from duty until symptoms resolve. • More severe infections: May necessitate hospitalisation, quarantine, antimicrobial therapy, or extended sick leave. • Food-handling roles: Consequences are more significant due to the heightened risk of transmission through contaminated food or surfaces. • Operational impact: Outbreaks on board may compromise safe manning levels and disrupt ship operations.
Unmitigated risk	Without mitigating measures, the unmitigated risk may be unacceptable, particularly where: • the individual is symptomatic; • carrier status is suspected or confirmed; • the individual works in catering or food-handling roles; • the ship operates in areas where timely medical evacuation is difficult. Unmitigated risk to: **Individual:** Risk of dehydration, acute illness, or deterioration without prompt medical care. **Crew**: Risk of transmission leading to multiple cases and reduced operational capacity.

	Ship: Potential for outbreaks affecting safe manning and hygiene standards.
Mitigation	Possible mitigating measures include: • completion of appropriate medical treatment; • confirmation of bacteriological clearance where required (particularly for catering personnel); • temporary removal from food-handling duties until full recovery; • adherence to infection-control measures on board; • specialist assessment where chronic carriage is suspected.
Mitigated risk	Following effective treatment and, where indicated, bacteriological clearance, the mitigated risk is generally acceptable for return to duty. A stricter assessment is required for individuals engaged in food preparation or handling, as even low-grade or asymptomatic shedding may pose a significant transmission risk. If the condition is expected to resolve fully within a short period, temporary unfitness is appropriate. If chronic carriage or recurrent infection is likely and cannot be reliably mitigated, the mitigated risk may remain unacceptable, requiring further evaluation.

22.2.2 PULMONARY TUBERCULOSIS

Reviewed 2025-11-19

A15-16	Pulmonary TB Transmission to others, recurrence (testing according to Regulations on tuberculosis control)	T – Positive screening test or clinical history - until investigated. If infected - until treatment stabilised and lack of infectivity confirmed. P – Relapse or severe residual damage	Not applicable	Successful completion of a course of treatment in accordance with the Regulations on tuberculosis control (and WHO Treatment of Tuberculosis guidelines).

Significance	Pulmonary tuberculosis (TB) is a communicable disease of major public health importance. In the maritime environment, it is particularly significant because: • it may be transmitted to others through airborne droplets, especially in confined living and working spaces; • it may progress insidiously, leading to chronic infection, respiratory impairment, or systemic illness; • relapse may occur if treatment is interrupted or incomplete; • effective treatment and follow-up require continuity of care, which may be difficult to maintain at sea.
Possible medical incident(s)	• Transmission to others, potentially resulting in multiple secondary cases on board. • Progression of illness due to chronic infection, leading to respiratory compromise or systemic deterioration. • Relapse, particularly if treatment is interrupted, incomplete, or poorly supervised.

	• Acute clinical deterioration, requiring medical evacuation or urgent specialist care.
General likelihood	The likelihood of infection, progression, or relapse varies considerably across regions and populations. Special testing is required for individuals who have resided for more than three months in countries with high TB incidence, in accordance with the Regulations on Tuberculosis Control. Individual likelihood depends on: • epidemiological exposure; • immune status; • adherence to treatment; • presence of drug-resistant strains.
Consequences	**Individual:** • Illness, respiratory symptoms, clinical deterioration, hospitalisation, and prolonged sick leave. • Risk of long-term pulmonary impairment if inadequately treated. **Crew:** • High risk of transmission, particularly in enclosed or poorly ventilated environments. • Need for contact tracing, screening, and possible prophylactic treatment. **Ship:** • Operational disruption due to medical evacuation, isolation measures, or reduced manning. • Public health implications at ports of call. • Potential reputational and regulatory consequences.
Unmitigated risk	Without mitigating measures, the unmitigated risk is unacceptable. **Individual:** Significant risk of clinical deterioration, relapse, or complications. **Crew:** High risk of transmission in shared accommodation and workspaces. **Ship:** Significant risk of operational disruption and public health intervention.
Mitigation	Mitigating measures include: • full diagnostic evaluation following a positive screening test or relevant clinical history; • initiation and completion of a WHO-compliant treatment regimen; • confirmation of non-infectivity before considering return to duty; • regular follow-up in accordance with the Regulations on Tuberculosis Control; • ensuring treatment supervision and continuity, which may not be feasible at sea.
Mitigated risk	Once treatment is stabilised and non-infectivity is confirmed, the mitigated risk may be acceptable, provided that: • the individual can maintain uninterrupted treatment and follow-up; • there is no evidence of drug resistance or complications; • the individual has no residual impairment affecting fitness for duty. If treatment cannot be reliably supervised at sea, or if relapse risk remains high, the mitigated risk may remain unacceptable.

	Severe residual pulmonary damage or recurrent disease may justify permanent unfitness.

The appellate body may consider authorising limited, restricted coastal service under the following conditions:

- The individual is compliant with treatment requirements
- They demonstrate a sound understanding of the disease and its management
- They are physically fit for duty
- A written agreement is in place for Directly Observed Therapy (DOT), involving both:
  - The ship's designated medical officer
  - The tuberculosis coordinator at the supervising hospital ashore (Norway)

22.2.2.1 TUBERCULOSIS SCREENING - REGULATORY REFERENCE

Tuberculosis screening and assessment shall follow the provisions of ***FOR-2009-02-13-205: Regulations on Tuberculosis Control***. Although not specifically tailored to seafarers, these regulations should be applied as far as practicable. Chapter 3 outlines the procedures for tuberculosis examination and reads as follows:

22.2.2.2 TUBERCULOSIS REGULATIONS SECTION 3-1. § 3-1. OBLIGATION TO UNDERGO TUBERCULOSIS SCREENING

Reviewed 2025-11-19

The section reads as follows:

"§ 3-1. Obligation to Undergo Tuberculosis Screening

The following individuals are required to undergo tuberculosis screening:

a) Persons originating from countries with a high prevalence of tuberculosis who intend to reside in the realm for more than three months and are subject to requirements for a residence permit, registration certificate, or residence card, including refugees and asylum seekers.

b) Persons who, within the past three years, have resided for at least three months in countries with a high prevalence of tuberculosis and who are commencing or resuming employment in the health and care services, in teaching positions, or in other roles involving childcare. This obligation also applies to individuals undergoing training or placement in such positions, as well as those staying in Norway as part of cultural exchange programmes, voluntary work, or similar arrangements involving close contact with children.

c) Other individuals for whom there is medical suspicion that they are, or have been, at risk of contracting tuberculosis.

The Norwegian Directorate of Health shall determine which countries are to be regarded as having a high prevalence of tuberculosis under this provision.

The Armed Forces shall issue guidelines for the screening of military personnel."

22.2.2.3 TUBERCULOSIS REGULATIONS SECTION 3-2. IMPLEMENTATION

Reviewed 2025-11-19

This section reads as follows:

"§ 3-2. Implementation

Screening of individuals referred to in § 3-1 shall be carried out as soon as practicable. Refugees and asylum seekers shall undergo screening within fourteen days of arrival.

Individuals referred to in § 3-1, letter b), shall be examined for active, transmissible tuberculosis and must not exhibit symptoms or signs of infectious tuberculosis prior to commencing employment or placement. Employers, educational institutions, host families, or equivalent parties are responsible for ensuring that the screening has been completed and that a negative result is confirmed prior to commencement."

22.2.2.4 TUBERCULOSIS REGULATIONS SECTION 3-3. FOLLOW-UP

Reviewed 2020-03-03

Section 3-3 reads as follows:

"§ 3-3 Follow-up
If symptoms or signs suggestive of tuberculosis are identified during screening, the individual shall be referred to a paediatric, pulmonary medicine, or infectious diseases outpatient clinic for further evaluation and additional investigations. In cases of suspected infectious pulmonary tuberculosis, diagnostic assessment shall be initiated without delay.
A specialist in pulmonary medicine, infectious diseases, or paediatrics shall be responsible for initiating treatment and determining the appropriate treatment regimen. Treatment shall be conducted in accordance with current recommendations for tuberculosis control, including directly observed therapy (DOT).

The specialist shall immediately notify the tuberculosis coordinator, who is responsible for establishing a treatment plan for the entire duration of therapy. This plan shall be developed in collaboration with the specialist, the patient, and the municipal medical officer. Follow-up and monitoring, including observation of tuberculosis medication intake, shall be carried out in cooperation with the municipal health services.

Patients diagnosed with multidrug-resistant tuberculosis shall be treated at the healthcare institution designated by the relevant regional health authority."

22.2.2.5 TUBERCULOSIS REGULATIONS SECTION 3-4. EXEMPTION FROM TUBERCULOSIS SCREENING

Reviewed 2025-11-19

This section reads as follows:

"§ 3-4. Exemption from Tuberculosis Screening
The municipal medical officer may, in collaboration with the hospital physician designated by the regional health authority pursuant to Section 7-3, third paragraph, of the Communicable Diseases Control Act, issue a decision granting exemption from the obligation to undergo tuberculosis screening for individuals referred to in § 3-1, where such exemption is deemed justifiable on public health grounds.

Appeals against such decisions shall be determined by the County Governor."

22.2.2.6 CONCLUSION: INDICATIONS FOR TUBERCULOSIS SCREENING

Reviewed 2025-11-19

Tuberculosis screening is indicated in the following circumstances:

- The individual originates from a country where the annual tuberculosis incidence exceeds 40 cases per 100,000 population.

- The individual has, within the past three years, resided for at least three months in a country with an annual tuberculosis incidence exceeding 40 cases per 100,000 population.
- There is a documented history of previous tuberculosis.
- There is known exposure to environmental sources of infection.
- There is clinical suspicion of active tuberculosis.

22.2.2.7 TUBERCULOSIS: DIAGNOSTIC METHODS

Chest radiography
Radiographic abnormalities are the most important indicator of pulmonary tuberculosis, although they are not diagnostic in themselves. Suspicion of tuberculosis based on chest radiograph findings is strengthened if the individual presents with symptoms consistent with tuberculosis, has known exposure to tuberculosis, has resided for an extended period in a high-incidence country, and has a positive IGRA result.

All chest radiograph findings considered potentially related to tuberculosis should be further investigated through microbiological analysis of respiratory tract specimens.

Standardisation of Chest Radiograph Reporting in Tuberculosis Screening
Individuals undergoing routine screening are, by definition, presumed to be healthy. The purpose of screening is to detect and ensure prompt treatment of individuals with active tuberculosis, thereby preventing transmission to others. Radiographic examination may also identify individuals at increased risk of reactivation of latent tuberculosis, for whom preventive treatment may be appropriate. Radiographic findings may generally be categorised as follows:
- No relevant pathology
- Findings possibly related to tuberculosis
- Suspicion of active tuberculosis
- Other pathological findings requiring follow-up

A precise and standardised radiology report enables the recipient to take appropriate action based on the findings:
- No follow-up required
- Follow-up with routine priority
- Follow-up as a matter of urgency

In cases of suspected active tuberculosis or radiographic findings possibly related to tuberculosis, **microbiological diagnostic testing shall be performed** (see also the section and table on infection control measures following radiographic screening of asylum seekers in reception centres, below). Interferon-Gamma Release Assay (IGRA).

To determine whether an individual is infected with tuberculosis, an **Interferon-Gamma Release Assay (IGRA)** is performed. An alternative approach is to conduct a Tuberculin Skin Test (TST), followed by IGRA if the TST yields a positive result.

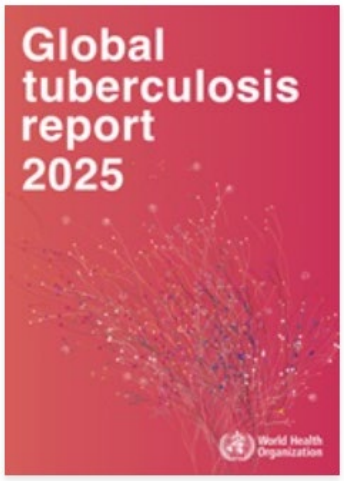
IGRA is not well suited for diagnosing active tuberculosis disease. In cases of suspected active tuberculosis or radiographic findings suggestive of tuberculosis**, sputum samples** should be collected for microbiological analysis.

Microbiological examination for the detection of Mycobacterium tuberculosis is the principal method for diagnosing tuberculosis disease, regardless of the affected organ system.

It is recommended that all individuals diagnosed with active tuberculosis or latent tuberculosis infection undergo **HIV testing**.

22.2.2.8 TUBERCULOSIS PREVALENCE

Reviewed 2025-11-19



You can find the most up-to-date global data on tuberculosis incidence and prevalence by country in the **WHO Global Tuberculosis Report** – latest edition.

The WHO Global tuberculosis report 2025 provides a comprehensive and up-to-date assessment of the TB epidemic, and of progress in prevention, diagnosis and treatment of the disease, at global, regional and country levels. This is done in the context of global TB commitments, strategies and targets.

The 2025 edition of the report is based primarily on data gathered by WHO from national ministries of health in annual rounds of data collection. In 2025, 184 countries and areas (out of 215) with more than 99% of the world's population and TB cases reported data.

Please note that direct comparisons between estimates of TB disease burden in the latest report and previous reports are not appropriate. The most recent time-series of estimates are published in this global TB report.

Link per 2025-11-19: https://www.who.int/publications/i/item/9789240116924

22.2.3 SEXUALLY TRANSMISSIBLE INFECTIONS

Reviewed 2025-11-19

A50-64	Sexually transmissible infections (STD) Acute deterioration, recurrence	T – If detected while onshore - until diagnosis confirmed, treatment initiated and impairing symptoms resolved. P – Untreatable impairing late complications	R – Consider near-coastal if oral treatment regime in place and symptoms resolved.	On successful completion of treatment.

Significance	• Sexually transmissible infections (STIs) comprise a heterogeneous group of conditions that may impair a seafarer's health and operational performance. They are significant in the maritime context because they may: reduce working capacity due to pain, fever, systemic symptoms, or complications; • require medical evaluation or treatment ashore; • be transmissible to others through sexual contact; • progress to serious long-term complications if untreated; lead to acute deterioration while at sea, where access to specialist care is limited.

Possible medical incident(s)	• Complications arising from disease progression, such as pelvic inflammatory disease, epididymo-orchitis, disseminated infection, or neurological involvement. • Transmission to others through sexual contact, potentially affecting crew welfare and creating interpersonal or disciplinary issues. • Acute symptom exacerbation, including severe pain, fever, or systemic illness requiring medical evacuation or urgent care.
General likelihood	Prevalence varies significantly across regions, countries, and populations. It is therefore not possible to provide a definitive general estimate. The World Health Organization (WHO) has published a Report on Global Sexually Transmitted Infection Surveillance 2015, which includes relevant statistical data. Additional prevalence data are available from the Centers for Disease Control and Prevention (CDC) and the European Centre for Disease Prevention and Control (ECDC).
Consequences	**Individual:** Untreated or inadequately treated STIs may lead to: • upper genital tract infections; • infertility; • chronic pelvic pain; • cervical cancer (for HPV-related disease); • increased susceptibility to, and transmissibility of, human immunodeficiency virus (HIV); • systemic complications in the case of syphilis, gonorrhoea, or chlamydial infection. **Crew:** • Risk of transmission through sexual contact with an infected individual. • Potential interpersonal conflict or disciplinary issues. **Ship:** • Temporary loss of workforce due to illness or medical appointments. • Increased burden on remaining crew. • Requirement for onboard treatment or medical consultation at the next port. • Possible discharge of the affected seafarer and need for replacement.
Unmitigated risk	Without mitigating measures, the unmitigated risk may be: **Individual:** Significant, due to potential for acute deterioration, pain, systemic illness, or long-term complications. **Crew:** Generally insignificant in the absence of sexual contact, but potentially significant if such contact occurs. **Ship:** Significant, due to possible loss of workforce and need for medical intervention. Overall, unmitigated risk is unacceptable during acute illness, untreated infection, or when diagnosis is uncertain.

Mitigation	Mitigating measures may include: • initiation and completion of appropriate antimicrobial therapy; • confirmation of clinical resolution of symptoms; • adherence to follow-up testing where indicated (e.g., test-of-cure for gonorrhoea); • counselling on prevention, safe sexual practices, and avoidance of sexual contact on board; • temporary restriction to near-coastal service if an oral treatment regimen is ongoing and symptoms have resolved.
Mitigated risk	Following effective treatment and resolution of impairing symptoms, the mitigated risk is generally acceptable for return to duty. **Individual**: Risk is reduced substantially once treatment is completed. **Crew**: Risk remains insignificant provided sexual contact does not occur. **Ship**: Risk becomes acceptable once the individual is clinically stable and no longer requires medical intervention. If late complications are untreatable or permanently impairing, the mitigated risk remains unacceptable, and permanent unfitness may be indicated.

22.2.4 VIRAL HEPATITIS

There are several types of viral hepatitis, the main types being A, B, C, D and E.

Type	Transmission	Course	Vaccine	Chronic risk	Common regions	Treatment available
A	Contaminated Food/water	Acute only	Yes	No	Global	Supportive care
B	Blood, bodily fluids, sexual contact, perinatal	Acute or chronic	Yes	Yes	Global	Antiviral medications to suppress virus
C	Blood (e.g. transfusions, needles)	Acute or chronic	No	Yes	Global	Curable with direct-acting antivirals (DAAs)
D	Requires HBV Co-infection	Chronic possible	Yes (via HBV)	Yes	Limited regions	NTCP-receptor inhibitors and peg-IFN-α: modest efficacy and risky treatment. HBV-treatment also needed.
E	Contaminated water	Acute only	Yes (limited)	Rare	Asia, Africa	Supportive care

Hepatitis A, B and C will be discussed below.

22.2.5 HEPATITIS A

Reviewed 2025-11-19

B15	Hepatitis A Transmissible by food or water contamination	T – Until jaundice resolved and liver function tests returned to normal.	Not applicable	On full recovery

Significance	Hepatitis A virus (HAV) is primarily transmitted via contaminated food or water but may also spread through sexual contact and injection practices. The incubation period ranges from 2 to 6 weeks. Individuals are contagious from approximately two weeks prior to symptom onset until one week thereafter.
Possible medical incident(s)	Transmission to other crew members Onboard outbreak requiring containment and hygiene measures Acute illness requiring medical intervention
General likelihood	The global incidence of HAV has declined since the introduction of the vaccine in 1996. Transmission occurs via the faecal–oral route, posing a risk of onboard infection. Key risk factors include: International travel (up to 50% of cases) Contact with infected individuals (10%) Homosexual activity (9%) Food- or waterborne outbreaks (7%) Exposure in daycare settings (4%) Injection drug use (3%)[107]
Consequences	**Individual:** The disease is typically self-limiting, requiring supportive care. However, approximately 20% of patients in large outbreaks may require hospitalisation [108]. Fulminant hepatitis necessitates intensive supportive therapy and may require liver transplantation. Around 85% of infected individuals recover clinically and biochemically within three months; nearly all recover within six months.[109]. Fatality rates increase with age and in individuals with chronic hepatitis C.[110] [111]. Reported case fatality rates: 0.4% in individuals aged 15–39 1.1% in individuals over 40 [112].

[107] http://www.uptodate.com/contents/overview-of-hepatitis-a-virus-infection-in-adults?detectedLanguage=en&source=search_result&search=hepatitis+A&selectedTitle=1%7E150&provider=noProvider
[108] Wheeler C, Vogt TM, Armstrong GL, et al. An outbreak of hepatitis A associated with green onions. N Engl J Med 2005; 353:890.
[109] Koff RS. Clinical manifestations and diagnosis of hepatitis A virus infection. Vaccine 1992; 10 Suppl 1:S15.
[110] Vento S, Garofano T, Renzini C, et al. Fulminant hepatitis associated with hepatitis A virus superinfection in patients with chronic hepatitis C. N Engl J Med 1998; 338:286.
[111] Vogt TM, Wise ME, Bell BP, Finelli L. Declining hepatitis A mortality in the United States during the era of hepatitis A vaccination. J Infect Dis 2008; 197:1282.
[112] Centers for Disease Control. Hepatitis Surveillance Report 1990; 53:23.

	Crew: Risk of transmission to other crew members, particularly those involved in care or duty substitution. **Ship:** Temporary loss of workforce, increased burden on remaining crew, need for onboard treatment and medical consultation at next port, potential discharge and replacement of affected seafarer, and implementation of hygiene protocols.
Unmitigated risk	Unacceptable, primarily due to individual health status and the nature of job responsibilities.
Mitigation	None applicable. Hepatitis A is a self-limiting viral infection, typically resolving without specific antiviral therapy. Supportive care remains the principal approach to management.
Mitigated risk	Unacceptable, unless the individual has fully recovered and is no longer contagious.

The WHO Global hepatitis report – most recent edition – provides a comprehensive update on the global burden of hepatitis A, including prevalence, mortality, and progress toward elimination targets.

As of today, the most recent report is that of 2024: https://www.worldhepatitisalliance.org/wp-content/uploads/2024/07/WHA-Global-Hepatitis-Report_FINAL.pdf

22.2.6 HEPATITIS B

Reviewed 2025-11-19

B16-19	Hepatitis B, C, etc. Transmissible by contact with blood or other bodily fluids. Possibility of permanent liver impairment and liver cancer.	T – Until jaundice resolved and liver function tests returned to normal. P – Persistent liver impairment with symptoms affecting reliable, safe and effective performance of duties	R, L – Uncertainty about total recovery or lack of infectivity. Case-by-case assessment based on duties on board and trade area.	On full recovery and confirmation of low level of infectivity.

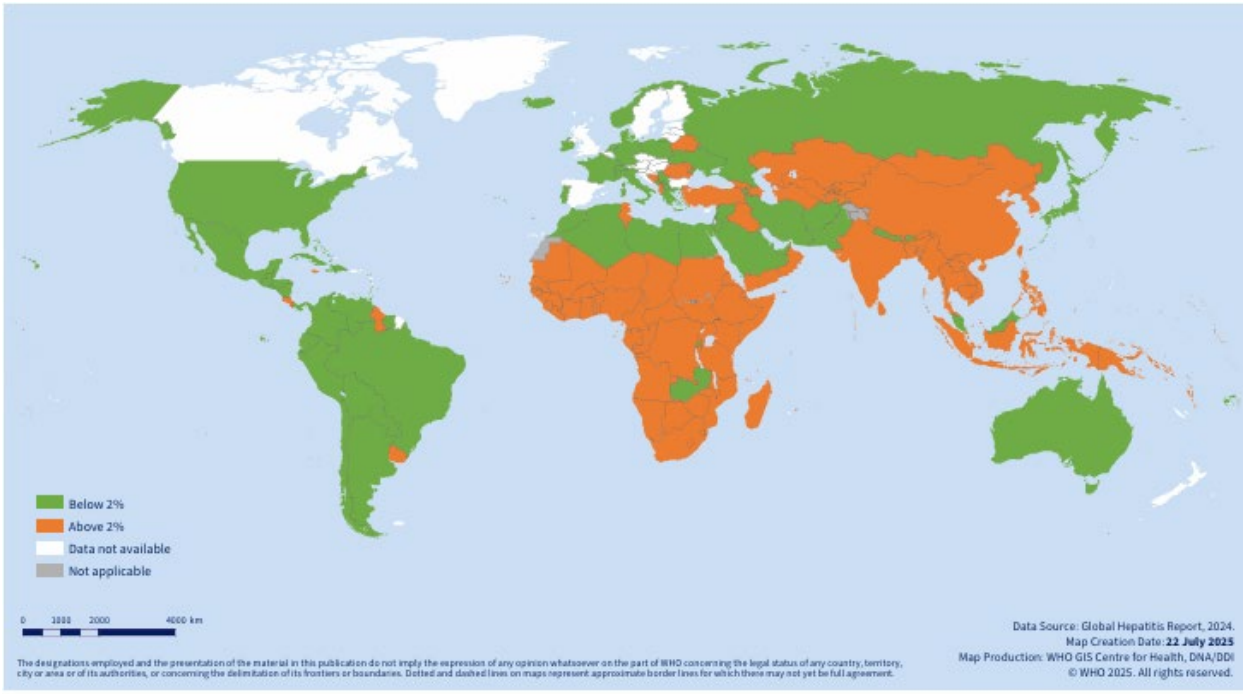
Significance	The primary concern is impaired physical capability, followed by the potential for complications that may precipitate an acute exacerbation while on board. The infectious risk is not deemed relevant in this context, as transmission occurs solely through contact with blood or other bodily fluids.
Possible medical incident(s)	**Acute phase incidents:** • Symptomatic hepatitis: Fever, fatigue, nausea, abdominal pain, jaundice. • Acute liver failure: A rare, but life-threatening complication, especially in older adults or those with co-infections • Exacerbation of pre-existing contidions: Hepatitis B may worsen other liver diseases or metabolic disorders • Chronic infection risks:

	• Cirrhosis. Progressive liver scarring occurs in a significant proportion of chronic carriers, especially those untreated. • Hepatocellular carcinoma: Chronic hepatitis B is a leading cause of liver cancer, accounting for 20-30% of cases in affected populations. • Extrahepatic manifestations: Rare immune-mediated conditions such as polyarteritis nodose or glomerulohephritis may develop.
General likelihood	Hepatitis B may present as either an acute or chronic infection. During the acute phase, clinical manifestations range from subclinical or anicteric hepatitis to icteric hepatitis, and in rare cases, fulminant hepatitis. Approximately 70% of individuals with acute Hepatitis B exhibit subclinical or anicteric forms, while 30% develop icteric hepatitis. The disease tends to be more severe in those coinfected with other hepatitis viruses [113]. Fulminant hepatitis remains uncommon, occurring in approximately 0.1% to 0.5% of cases [114]. Progression to chronic infection is primarily age-dependent. The likelihood of chronicity is approximately 90% for perinatally acquired infections [115], 20 to 50% for infections acquired between the age of one and five years [116] and less than 5% infections acquired in adulthood [117]. Complete eradication of HBV following acute infection is rare. Evidence suggests that latent infection may persist despite clinical recovery, maintaining a T-cell mediated immune response for decades and thereby suppressing viral activity [118]. The frequency with which latent infection progresses to cirrhosis remains unclear; however, immunosuppressive therapy may precipitate viral reactivation. Chronic Hepatitis B infection encompasses a spectrum of outcomes. Approximately 30% to 50% of individuals with chronic HBV infection report a prior episode of acute hepatitis, although many remain asymptomatic. The long-term sequelae range from an inactive carrier state to the development of cirrhosis, hepatic failure, hepatocellular carcinoma (HCC), extrahepatic manifestations, and death. The prognosis appears to vary with the clinical setting.
Consequences	**Individual:** Risk of medical complications; potential inability to perform assigned duties; possible requirement for urgent medical intervention either on board or ashore. **Crew:** Risk of transmission to other crew members, particularly those involved in care or exposed to bodily fluids.

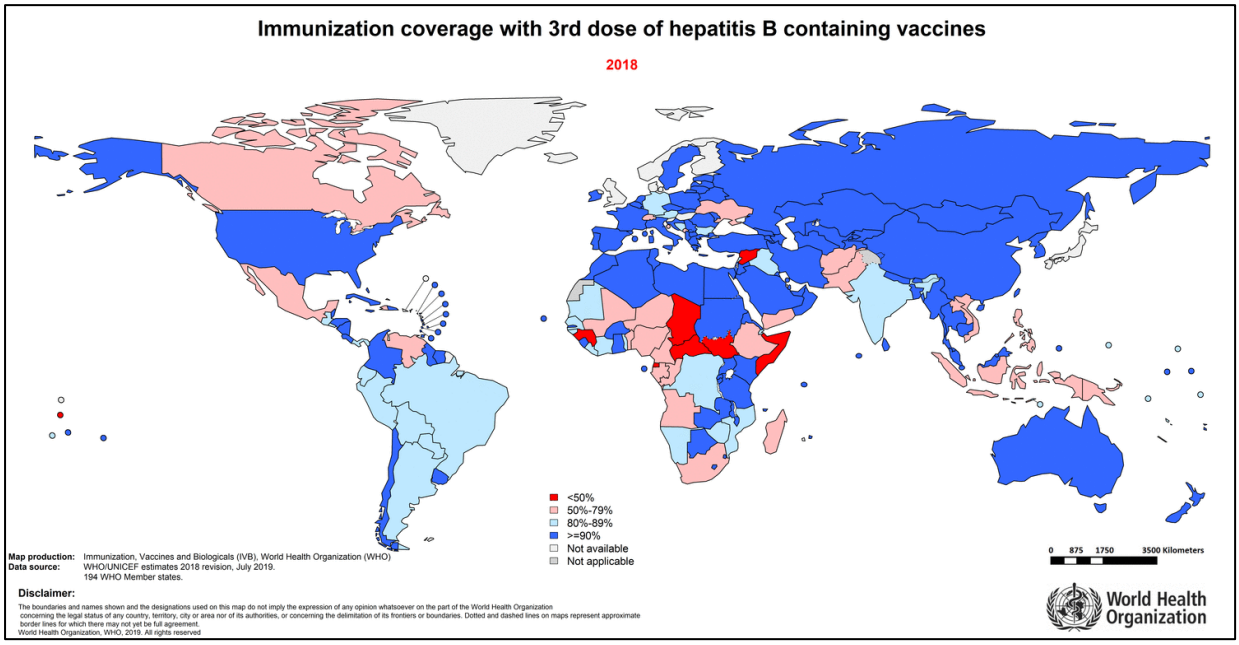
[113] Liaw YF, Tsai SL, Sheen IS, Chao M, Yeh CT, Hsieh SY, Chu CM: Clinical and virological course of chronic hepatitis B virus infection with hepatitis C and D virus markers. Am J Gastroenterol. 1998;93(3):354.
[114] Wright TL, Mamish D, Combs C, Kim M, Donegan E, Ferrell L, Lake J, Roberts J, Ascher NL:Hepatitis B virus and apparent fulminant non-A, non-B hepatitis. Lancet. 1992;339(8799):952.
[115] Stevens CE, Beasley RP, Tsui J, Lee WC: Vertical transmission of hepatitis B antigen in Taiwan. N Engl J Med. 1975;292(15):771.
[116] Beasley RP, Hwang LY, Lin CC, Leu ML, Stevens CE, Szmuness W, Chen KP: Incidence of hepatitis B virus infections in preschool children in Taiwan. J Infect Dis. 1982;146(2):198
[117] Tassopoulos NC, Papaevangelou GJ, Sjogren MH, Roumeliotou-Karayannis A, Gerin JL, Purcell RH:Natural history of acute hepatitis B surface antigen-positive hepatitis in Greek adults. Gastroenterology. 1987;92(6):1844.
[118] Rehermann B, Ferrari C, Pasquinelli C, Chisari FV: The hepatitis B virus persists for decades after patients' recovery from acute viral hepatitis despite active maintenance of a cytotoxic T-lymphocyte response. Nat Med. 1996;2(10):1104.

	Ship: Temporary loss of workforce, increased burden on remaining crew, need for onboard treatment and medical consultation at next port, potential discharge and replacement of affected seafarer, and implementation of hygiene protocols.
Unmitigated risk assessment	Unacceptable
Mitigation	There is no specific antiviral treatment for acute hepatitis B infection. Most individuals recover spontaneously with supportive care. In severe cases, hospitalisation may be necessary. Chronic hepatitis B infection may require long-term antiviral therapy to suppress viral replication and prevent progression to cirrhosis or hepatocellular carcinoma. In the context of onboard illness, strict hygiene protocols and the safe handling of blood and bodily fluids are essential to minimise the risk of transmission. Vaccination remains the most effective preventive measure at the individual level.
Mitigated risk	Unacceptable, unless the individual has fully recovered and is no longer contagious.
Recommendation	As long as there is jaundice or the liver enzymes are abnormal, the person is unfit. In the event of chronic hepatitis, permanent unfitness is a likely decision. Restrictions in validity or trade area could be considered if there is uncertainty regarding full recovery or the infectious status. Upon full recovery an unrestricted medical certificate is the most common decision. Individuals who are confirmed carriers of hepatitis B and are non-contagious should be considered eligible for an unrestricted and unlimited medical certificate (see section on chronic carriers below).

22.2.6.1 CHRONIC HEPATITIS B PREVALENCE IN THE GENERAL POPULATION, 2022 (%) [119]



Source: Global hepatitis report, 2024 *(1)*.



Source: WHO[120].

[119] https://cdn.who.int/media/docs/default-source/hq-hiv-hepatitis-and-stis-library/2025-whd-hep-information-sheet.pdf?sfvrsn=54f145f5_5

[120] https://www.who.int/immunization/monitoring_surveillance/burden/vpd/surveillance_type/passive/hepb3_1985_2018.gif?ua=1

22.2.6.2 HEPATITIS B - CHRONIC CARRIERS:

Reviewed 2025-11-19

Long-Term Prognosis of HBsAg-Positive Individuals

- Long-term follow-up studies of HBsAg-positive blood donors indicate that the majority remain asymptomatic, with a very low risk of developing cirrhosis or hepatocellular carcinoma (HCC) [121] [122] [123].
- In one 16-year cohort study involving 317 HBsAg-positive blood donors, only three individuals died from HBV-related cirrhosis, and none developed HCC [124].
- In contrast, HBV-infected individuals from endemic regions and those with chronic hepatitis exhibit a higher risk of disease progression. The estimated five-year progression rates are as follows [125]:
    - Chronic hepatitis to cirrhosis - 12 to 20%
    - Compensated hepatitis to liver failure - 20 to 23%
    - Compensated cirrhosis to hepatocellulær carcinoma (HCC) - 6 to 15%

Prognostic Indicators and Coinfection in Chronic Hepatitis B

The cumulative survival rates associated with progressive stages of chronic hepatitis B are as follows [126] [127] [128] [129] [130]:

- Compensated cirrhosis – Approximately 85% at five years
- Decompensated cirrhosis – 55-70% at one year and 14-35% at five years
-

Prognosis in chronic HBV infection is influenced by a multitude of factors, including viral load, genotype, host immune response, comorbidities, and access to antiviral therapy. These determinants are too extensive to detail in this context.

Reactivation of HBV is common in individuals undergoing immunosuppressive therapy, but spontaneous reactivation is rare.

Coinfection with other hepatitis viruses is not uncommon and is associated with poorer clinical outcomes [131]. Hepatitis C virus (HCV) is estimated to be present in 10–15% of patients with HBV-associated chronic hepatitis, cirrhosis, or hepatocellular carcinoma (HCC). Among individuals with HCV infection [132], 62% show evidence of prior HBV exposure, while 6% have chronic HBV infection [133].

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[121] Villeneuve JP, Desrochers M, Infante-Rivard C, Willems B, Raymond G, Bourcier M, CôtéJ, Richer G:A long-term follow-up study of asymptomatic hepatitis B surface antigen-positive carriers in Montreal. Gastroenterology. 1994;106(4):1000.
[122] Dragosics B, Ferenci P, Hitchman E, Denk H: Long-term follow-up study of asymptomatic HBsAg-positive voluntary blood donors in Austria: a clinical and histologic evaluation of 242 cases. Hepatology. 1987;7(2):302.
[123] Manno M, CammàC, Schepis F, Bassi F, Gelmini R, Giannini F, Miselli F, Grottola A, Ferretti I, Vecchi C, De Palma M, Villa E: Natural history of chronic HBV carriers in northern Italy: morbidity and mortality after 30 yearsGastroenterology. 2004;127(3):756.
[124] Villeneuve JP, Desrochers M, Infante-Rivard C, Willems B, Raymond G, Bourcier M, CôtéJ, Richer G:A long-term follow-up study of asymptomatic hepatitis B surface antigen-positive carriers in Montreal. Gastroenterology. 1994;106(4):1000.
[125] Fattovich G, Bortolotti F, Donato F: Natural history of chronic hepatitis B: special emphasis on disease progression and prognostic factors. J Hepatol. 2008;48(2):335.
[126] Fattovich G, Giustina G, Schalm SW, Hadziyannis S, Sanchez-Tapias J, Almasio P, Christensen E, Krogsgaard K, Degos F, Carneiro de Moura M: Occurrence of hepatocellular carcinoma and decompensation in western European patients with cirrhosis type B. The EUROHEP Study Group on Hepatitis B Virus and Cirrhosis. Hepatology. 1995;21(1):77.
[127] Liaw YF, Lin DY, Chen TJ, Chu CM: Natural course after the development of cirrhosis in patients with chronic type B hepatitis: a prospective study. Liver. 1989;9(4):235.
[128] Fattovich G, Bortolotti F, Donato F:Natural history of chronic hepatitis B: special emphasis on disease progression and prognostic factors. J Hepatol. 2008;48(2):335.
[129] de Jongh FE, Janssen HL, de Man RA, Hop WC, Schalm SW, van Blankenstein M: Survival and prognostic indicators in hepatitis B surface antigen-positive cirrhosis of the liver. Gastroenterology. 1992;103(5):1630.
[130] Realdi G, Fattovich G, Hadziyannis S, Schalm SW, Almasio P, Sanchez-Tapias J, Christensen E, Giustina G, Noventa F:Survival and prognostic factors in 366 patients with compensated cirrhosis type B: a multicenter study. The Investigators of the European Concerted Action on Viral Hepatitis (EUROHEP). J Hepatol. 1994;21(4):656.
[131] Mimms LT, Mosley JW, Hollinger FB, Aach RD, Stevens CE, Cunningham M, Vallari DV, Barbosa LH, Nemo GJ:Effect of concurrent acute infection with hepatitis C virus on acute hepatitis B virus infection. BMJ. 1993;307(6912):1095.
[132] Liaw YF: Role of hepatitis C virus in dual and triple hepatitis virus infection. Hepatology. 1995;22(4 Pt 1):1101.
[133] Bini EJ, Perumalswami PV: Hepatitis B virus infection among American patients with chronic hepatitis C virus infection: prevalence, racial/ethnic differences, and viral interactions. Hepatology. 2010;51(3):759.

22.2.7 HEPATATITS C

Reviewed 2025-11-20

Significance	The principal concern is impaired physical capacity, followed by the risk of complications that could precipitate an acute exacerbation whilst on board. The infectious risk is considered low in this context, as transmission occurs exclusively through contact with infected blood—such as via shared needles or syringes, blood transfusion, organ transplantation, sexual practices involving blood exposure, or exposure to infected blood in healthcare settings. The disease is curable with direct-acting antivirals (DAAs). When successfully treated (achieved sustained virologic response, meaning no detectable virus 12 weeks after completing treatment), there will be no further progression of liver disease due to HCV, the risk of liver cancer decreases significantly, and the individual is no longer infectious to others.
Possible medical incident(s)	Acute phase incidents: Symptomatic hepatitis: Fever, fatigue, nausea, abdominal pain, jaundice. Acute liver failure: A rare, but life-threatening complication, especially in older adults or those with co-infections Exacerbation of pre-existing conditions: Hepatitis B may worsen other liver diseases or metabolic disorders Chronic infection risks: Chronicity: Hepatitis C — if untreated — carries a higher risk of progressing to chronic infection than hepatitis B, particularly in adults. While most adults' clear hepatitis B spontaneously (90–95% of healthy individuals), the majority of hepatitis C infections become chronic [134]. Cirrhosis: Progressive liver fibrosis and eventual cirrhosis develop in a substantial proportion of chronically infected individuals, especially those who remain untreated. Hepatocellular carcinoma: Chronic hepatitis C significantly increases the risk of primary liver cancer, particularly in those with cirrhosis. Extrahepatic manifestations: Rare immune-mediated conditions such as cryoglobulinaemic vasculitis, glomerulonephritis, or lichen planus may occur.
General likelihood	Hepatitis C may present as either an acute or chronic infection [135]. During the acute phase, clinical manifestations range from subclinical or anicteric hepatitis to icteric hepatitis, although fulminant hepatitis is exceedingly rare. The majority of individuals with acute hepatitis C remain asymptomatic or exhibit mild, non-specific symptoms. Coinfection with other hepatitis viruses may exacerbate disease severity. Progression to chronic infection is common. Spontaneous viral clearance occurs in approximately 15% to 45% of cases, with the remaining 55% to 85% progressing to chronic infection[136]. Unlike hepatitis B, the likelihood of chronicity in hepatitis C is not strongly age-dependent, although host factors such as immune status and genetic predisposition may influence outcomes.

[134] Mayo Clinic: Hepatitis B and Hepatitis C: What's the difference? Published 29 Aug 2025. Visited 20 Nov 2025. https://www.mayoclinic.org/diseases-conditions/hepatitis-b/in-depth/hepatitis-b-versus-hepatitis-c/art-20585896
[135] WHO: Fact sheet on Hepatitis C. Updated 25 July 2025. Visited 20 Nov 2025. https://www.who.int/news-room/fact-sheets/detail/hepatitis-c
[136] CDC: Clinical Caare of Hepatitis C. Published 31 Jan 2025. VIsited 20 Nov 2025. https://www.cdc.gov/hepatitis-c/hcp/clinical-care/index.html

	Complete eradication of HCV following acute infection without treatment. In the absence of antiviral therapy, chronic infection may persist for decades. Recent studies of acute HCV infection report higher rates of spontaneous viral clearance, some as high as 50 percent [137] [138] [139] [140] [141] [142]. While some individuals maintain stable liver function, others experience progressive hepatic fibrosis. The risk of cirrhosis increases with duration of infection and coexisting factors such as alcohol use or metabolic disease. Chronic hepatitis C infection encompasses a spectrum of outcomes. Many individuals remain asymptomatic for years [143]. However, long-term sequelae may include cirrhosis, hepatic failure, hepatocellular carcinoma (HCC), and extrahepatic manifestations such as cryoglobulinaemic vasculitis, glomerulonephritis, and insulin resistance. The prognosis is influenced by multiple factors. These include the presence of cirrhosis, comorbid conditions, and access to antiviral therapy. The advent of direct-acting antivirals has markedly improved outcomes, with sustained virologic response rates exceeding 95% in most populations. Treatment of hepatitis C has undergone a paradigm shift. The introduction of direct-acting antivirals (DAAs) has transformed the management of chronic hepatitis C. These agents target specific steps in the viral replication cycle and are administered orally, typically over 8 to 12 weeks. Efficacy: DAAs achieve sustained virologic response (SVR) in the vast majority of patients, effectively constituting a cure. Tolerability: Treatment is generally well tolerated, with minimal adverse effects. Genotype considerations: While earlier regimens were genotype-specific, most current therapies are pangenotypic. Post-treatment monitoring: Individuals with advanced fibrosis or cirrhosis require continued surveillance for hepatocellular carcinoma, even after achieving SVR.
Consequences	**Individual:** Risk of medical complications; potential inability to perform assigned duties; possible requirement for urgent medical intervention either on board or ashore, particularly in the event of hepatic decompensation or extrahepatic manifestations. **Crew:** Minimal risk of transmission to other crew members under normal working conditions. Transmission requires percutaneous or mucosal exposure

[137] Nunnari G, Montineri A, Portelli V, et al. The use of peginterferon in monotherapy or in combination with ribavirin for the treatment of acute hepatitis C. Eur Rev Med Pharmacol Sci 2012; 16:1013.
[138] Pérez-Álvarez R, García-Samaniego J, Solá R, et al. Acute hepatitis C in Spain: a retrospective study of 131 cases. Rev Esp Enferm Dig 2012; 104:21.
[139] Morin T, Pariente A, Lahmek P, Investigator Group of ANGH, SPILF, FNPRH. Favorable outcome of acute occupational hepatitis C in healthcare workers: a multicenter French study on 23 cases. Eur J Gastroenterol Hepatol 2011; 23:515.
[140] Grebely J, Pham ST, Matthews GV, et al. Hepatitis C virus reinfection and superinfection among treated and untreated participants with recent infection. Hepatology 2012; 55:1058.
[141] Ferreira Ade S, Perez Rde M, Ferraz ML, et al. Acute hepatitis C in Brazil: results of a national survey. J Med Virol 2011; 83:1738.
[142] Dirchwolf M, Marciano S, Mauro E, et al. Clinical epidemiology of acute hepatitis C in South America. J Med Virol 2017; 89:276.
[143] Williams I. Epidemiology of hepatitis C in the United States. Am J Med 1999; 107:2S.

	to infected blood; thus, risk is primarily confined to those involved in medical care or exposed to blood through injury or invasive procedures. **Ship:** Temporary loss of workforce; increased burden on remaining crew; need for onboard assessment and medical consultation at the next port; potential discharge and replacement of the affected seafarer; and implementation of standard precautions to prevent bloodborne transmission.
Unmitigated risk assessment	Unacceptable
Mitigation	There is no specific antiviral treatment routinely recommended for acute hepatitis C infection. Most individuals with acute infection are asymptomatic or experience only mild symptoms. A proportion will spontaneously clear the virus without intervention, typically within six months. **Antiviral therapy during the acute phase is generally deferred**, as early treatment does not significantly improve long-term outcomes compared to treating established chronic infection. However, close monitoring is essential to identify those who do not spontaneously clear the virus and may benefit from timely initiation of antiviral therapy. (Discussions are ongoing whether antiviral therapy during acute infection should be routinely applied, because of the potential engagement and public health benefits [144].) Chronic hepatitis C infection requires antiviral therapy to achieve viral eradication and prevent progression to cirrhosis or hepatocellular carcinoma. **Direct-acting antivirals (DAAs)** are the standard of care, offering high cure rates with short treatment durations and minimal adverse effects. **In the context of onboard illness**, strict hygiene protocols and the safe handling of blood and bodily fluids are essential to minimise the risk of transmission. Although the risk of occupational transmission is low, standard precautions must be observed, particularly during procedures involving potential blood exposure. There is currently no vaccine available for hepatitis C. Preventive measures rely on risk reduction strategies, including safe injection practices, blood screening, and education regarding transmission routes.
Mitigated risk	Unacceptable, unless the individual has fully recovered or has been successfully treated and is no longer viraemic.
Recommendation	As long as there is jaundice or significant liver enzyme elevation, the individual is unfit for duty. In the event of chronic hepatitis C infection, permanent unfitness may be considered, particularly in the presence of cirrhosis or ongoing viraemia. Restrictions in certificate validity or trade area may be appropriate where there is uncertainty regarding recovery or virological status. Upon confirmed

[144] UpToDate. Clinical manifestations, diagnosis and treatment of Hepatitis C virus infections in adults. Updated 28 Aug 2025. Visited 20 nov 2025. https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-treatment-of-acute-hepatitis-c-virus-infection-in-adults?search=Hepatitis%20C&source=search_result&selectedTitle=3~150&usage_type=default&display_rank=3#H3426210275

	sustained virologic response (SVR) following antiviral therapy, an unrestricted medical certificate is generally appropriate. Note Unlike hepatitis B, there is no carrier state in hepatitis C in the classical sense. Individuals who have achieved sustained virologic response (SVR) and show no evidence of active infection should be considered eligible for an unrestricted and unlimited medical certificate.

22.2.8 HIV AND AIDS

B20-24	HIV+ Transmissible by contact with blood or other bodily fluids. Progression to HIV-associated diseases or AIDS.	T – Until stabilised on treatment with CD4 level of >350 or when treatment changed and tolerance of new medication uncertain. P – Non-reversible impairing HIV-associated disease. Continuing impairing effects of medication.	R, L – HIV+ and low likelihood of progression; on no treatment or on stable medication without side effects but requiring regular specialist surveillance.	HIV+, no current impairment and very low likelihood of disease progression. No side effects of treatment or need for frequent monitoring.

Reviewed 2025-11-20

Significance	Human Immunodeficiency Virus (HIV) is transmitted through blood and certain bodily fluids. Occupational transmission is rare and typically associated with direct exposure to infected blood, such as through needlestick injuries or open wounds. In maritime settings, the primary relevance lies in the individual's health status and treatment adherence, rather than transmission risk. Due to the nature of transmission and the historical stigma surrounding HIV, legal, ethical, and confidentiality considerations are paramount in medical assessments and employment decisions.
Possible medical incident(s)	Accidental exposure to blood in the event of injury or medical intervention. Temporary or permanent incapacity due to opportunistic infections or HIV-related complications. Adverse effects from antiretroviral therapy (ART), potentially impacting performance. Progression to Acquired Immunodeficiency Syndrome (AIDS) in untreated or advanced cases.
General likelihood	The risk of occupational transmission is negligible when standard precautions are observed. **Sudden incapacitation** is highly unlikely in individuals with early-stage or well-managed HIV infection. **ART is generally well tolerated**, though some individuals may experience fatigue, gastrointestinal symptoms, or neurocognitive effects.

	With effective treatment, HIV is considered a manageable chronic condition.
Consequences	**Individual:** In early and well-controlled stages, no functional impairment is expected. Regular specialist follow-up is required. **Crew:** Risk of transmission is minimal, provided standard hygiene and safety protocols are followed. **Ship:** Potential need for medical consultation or replacement in the event of complications or treatment failure.
Unmitigated risk assessment	**Without treatment or monitoring**, HIV infection may progress to AIDS, resulting in immunosuppression, opportunistic infections, and significant functional impairment. In such cases, fitness for duty is compromised, and the risk to the individual and operational continuity increases. Until treatment or monitoring is established, the risk is considered unacceptable.
Mitigation	Adherence to ART with documented virological suppression. Regular follow-up with infectious disease specialists. Compliance with hygiene protocols and safe handling of blood and bodily fluids. Confidentiality and non-discrimination policies to support psychological wellbeing and legal compliance.
Mitigated risk	**Individual:** Very low risk in early or well-managed stages with stable clinical parameters. **Crew:** Very low risk when standard precautions are observed. **Ship:** Very low risk when treatment adherence and follow-up are maintained.
Recommendation	HIV infection under effective treatment and regular follow-up does not generally impair working capacity. However, the need for periodic specialist review may necessitate restrictions in certificate validity or trade area, particularly for long voyages without access to medical care [145]. An unrestricted medical certificate may be issued to individuals with documented virological suppression, stable clinical status, and no significant treatment-related side effects. Untreated or advanced HIV infection may warrant temporary or permanent unfitness, depending on clinical severity and functional impact.

[145] Carter T: Handbook for medical examiners, http://handbook.ncmm.no

22.2.9 OTHER INFECTIONS

Reviewed 2025-11-27

A00-B99	Other infections Personal impairment, infection of others	T– If detected while onshore: until free from risk of transmission and capable of performing duties. P – If continuing likelihood of repeated impairing or infectious recurrences.	Case-by-case assessment based on nature of infection.	Full recovery and confirmation of low level of infectivity.

Any infectious disease entails inherent risks both to the affected individual and to others on board. Such conditions may compromise the individual's ability to perform assigned duties, particularly in cases involving febrile illness, gastrointestinal disturbance, or systemic involvement. Furthermore, there is a potential risk of transmission to fellow crew members, especially in the context of close living quarters and shared facilities.

Fitness to travel to the point of embarkation must also be carefully assessed. Depending on the nature and severity of the infection, the individual may be deemed unfit to travel—particularly by air. Airlines frequently impose specific restrictions on passengers with communicable diseases, and these requirements must be taken into account when planning embarkation.

Legal obligations concerning notifiable diseases must be strictly observed. Certain infectious diseases are subject to mandatory reporting to port health authorities. In some circumstances, this may result in quarantine measures being imposed upon the vessel, with consequent disruption to its itinerary and operational schedule.

22.3 NEOPLASMS

Reviewed 2025-11-27

C00-D48	Malignant neoplasms, including lymphoma, leukaemia and related conditions. Recurrence, especially acute complications, e.g. acute spontaneous bleeding and seizures.	T – Until investigated, treated and prognosis assessed P – Continuing impairment with symptoms affecting work at sea and with high likelihood of recurrence	L – Limited to interval between specialist reviews if: – cancer diagnosed <5 years ago; and – there is no current impairment of ability to perform normal or emergency duties or to live at sea; and – there is a low likelihood of recurrence and minimal risk of requirement for urgent medical treatment / hospitalisation R – If any continuing impairment does not interfere with essential duties and any recurrence is unlikely to require emergency medical treatment / hospitalisation.	Cancer diagnosed more than 5 years ago, or specialist reviews no longer required and no current impairment with low continuing likelihood of impairment from recurrence. To be confirmed by specialist report with evidence for opinion stated.

Significance	The significance of neoplastic conditions in relation to maritime safety lies in the potential for impairment—whether due to the disease itself, metastatic spread, or complications and side-effects arising from treatment. Such impairment may pose risks to the affected individual, fellow crew members, and the safe operation of the vessel. Risk assessment must be tailored to the specific diagnosis, tumour type, stage, treatment modality, and individual clinical factors. Given the heterogeneity of neoplastic diseases and the rapid evolution of oncological therapies, prognostic assessments based on outdated literature may no longer be reliable.
Possible medical incident(s)	Disease progression resulting in physical or cognitive impairment Acute complications such as bleeding, obstruction, or infection Adverse effects of chemotherapy, radiotherapy, or immunotherapy Paraneoplastic syndromes affecting neurological or metabolic function
General likelihood	It is not feasible to provide a generalised likelihood estimate for this group, owing to the diversity of tumour types and disease stages. Each case must be assessed individually, with input from an appropriate medical specialist.
Consequences	**Individual:** Inability to fulfil duties; need for specialist consultation, hospitalisation, or medical repatriation. **Crew:** Redistribution of duties; potential psychological impact of caring for a seriously ill colleague. **Ship:** Operational disruption due to medical leave, onboard treatment requirements, or crew replacement. On board, worker on sick-leave, signed off, need for replacement
Unmitigated risk	Unmitigated neoplastic disease—particularly when untreated, progressive, or associated with systemic complications—may result in serious impairment, unpredictability in performance, and elevated risk to both the individual and the vessel. Unmitigated risk is unacceptable.
Mitigation	Completion of possible curative treatment with documented remission. Stable clinical status with no ongoing need for specialist intervention. Absence of treatment-related side-effects that impair function. Regular follow-up, where appropriate, with clear parameters for monitoring.
Mitigated risk	**Individual:** Ranges from insignificant to serious, depending on disease status and treatment effects. **Crew:** Ranges from insignificant to significant, particularly if duties are redistributed or emotional strain arises. **Ship:** Ranges from insignificant to significant, based on operational impact and medical contingency planning.
Recommendation	Specialist advice is essential in all cases. The specialist's medical assessment should include the diagnosis, tumour type, stage, treatment history, treatment response, any residual side-effects, and the prognosis with respect to acute impairment, risk to others on board, and risk to the vessel.

22.4 D50-89 BLOOD AND BLOOD-FORMING ORGANS, IMMUNE MECHANISM

22.4.1 ANAEMIA

D50-59	Anaemia / Haemoglobinopathies Reduced exercise tolerance. Episodic red cell breakdown.	T – Distant waters, until haemoglobin normal and stable P – Severe recurrent or continuing anaemia or impairing symptoms from red cell breakdown that are untreatable	R, L – Consider restriction to near-coastal waters and regular surveillance if reduced haemoglobin level but asymptomatic	Normal levels of haemoglobin

Reviewed 2025-11-20

Significance	Anaemia is a clinical condition characterised by reduced haemoglobin concentration or red blood cell mass, resulting in diminished oxygen-carrying capacity. It is frequently secondary to other underlying disorders—such as chronic disease, nutritional deficiency, bone marrow dysfunction, or blood loss—which must be thoroughly investigated. The implications for safety and fitness for duty vary considerably depending on the aetiology, severity, and clinical course of the condition.
Possible medical incident(s)	Fatigue and reduced stamina, particularly during physical exertion Tachycardia or palpitations Dizziness or orthostatic symptoms Impaired concentration or cognitive slowing Insomnia or sleep disturbance Additional symptoms specific to the underlying cause (e.g. gastrointestinal bleeding, menstrual irregularities, or signs of chronic disease)
General likelihood	The likelihood of anaemia and its impact on fitness varies widely, depending on the underlying condition, severity, and response to treatment. It may range from negligible to high.
Consequences	**Individual:** Reduced physical and cognitive performance; potential need for medical evaluation, specialist referral, or hospitalisation. **Crew:** Redistribution of duties to compensate for impaired performance. **Ship:** Operational disruption due to medical leave, repatriation, or need for crew replacement.
Unmitigated risk	Uninvestigated or untreated anaemia may lead to progressive functional impairment, reduced safety margins in emergency situations, and increased risk of medical incidents at sea. The unmitigated risk is regarded unacceptable.
Mitigation	Identification and treatment of the underlying cause • Normalisation of haemoglobin levels • Demonstrated clinical stability and absence of symptoms • No requirement for specialist follow-up within the certificate validity period
Mitigated risk	**Individual:** Ranges from insignificant (in mild, resolved cases) to serious (in severe or progressive anaemia)

	Crew: Ranges from insignificant to significant, depending on the degree of functional impairment and required duty redistribution **Ship:** Ranges from insignificant to significant, particularly if replacement or medical evacuation is required

22.4.2 SPLENECTOMY, ASPLENIA AND HYPOSPLENIA

D73	Splenectomy (history of surgery) Increased susceptibility to certain infections	T – Post surgery until fully recovered	R – Case-by-case assessment. Likely to be fit for near-coastal and temperate work but may need restriction on service in tropics.	Case-by-case assessment

Reviewed 2025-11-27

Significance	There is a markedly increased risk of overwhelming sepsis from otherwise minor infections. Asplenia and hyposplenism may be either anatomical or functional. Anatomical asplenia is most commonly due to surgical removal of the spleen. Functional asplenia or hyposplenism may result from conditions causing splenic atrophy, infarction, engorgement, or infiltration.
Possible medical incident(s)	Infections that are typically mild or negligible in immunocompetent individuals may become rapidly life-threatening in those without splenic function.
General likelihood	The incidence of severe sepsis following splenectomy is approximately 8%. Thromboembolic complications occur in up to 35% of patients [146]. Portal vein thrombosis has been reported in 5–37% of patients within two months post-splenectomy, with most cases arising within the first two weeks [147] [148] [149] [150] [151]. Long-term thrombotic risk varies depending on the underlying indication for splenectomy. In one study of 8,860 patients, the prevalence of: Deep vein thrombosis was 32% Portal vein thrombosis 16% Pulmonary embolism 13% [152]. Pulmonary hypertension is another recognised complication. Among patients with pulmonary hypertension, 8.6–11.5% had undergone splenectomy,

[146] Petroianu A, Federal University of Minas Gerais, Brazil; «THE SPLEEN», Bentham Books, eISBN 978-1-60805-273-8
[147] Ikeda M, Sekimoto M, Takiguchi S, et al. High incidence of thrombosis of the portal venous system after laparoscopic splenectomy: a prospective study with contrast-enhanced CT scan. Ann Surg 2005;241(2):208-216.
[148] Hassn AM, Al-Fallouji MA, Ouf TI, Saad R. Portal vein thrombosis following splenectomy. Br J Surg 2000;87(3):362-373
[149] Chaffanjon PC, Brichon PY, Ranchoup Y, Gressin R, Sotto JJ. Portal vein thrombosis following splenectomy for hematologic disease: prospective study with Doppler color flow imaging. World J Surg 1998;22(10):1082-1086
[150] Stamou KM, Toutouzas KG, Kekis PB, et al. Prospective study of the incidence and risk factors of postsplenectomy thrombosis of the portal, mesenteric, and splenic veins. Arch Surg 2006;141(7):663-669
[151] Skarsgard E, Doski J, Jaksic T, et al. Thrombosis of the portal venous system after splenectomy for pediatric hematologic disease. J Pediatr Surg 1993;28(9):1109-1112
[152] Taher A, Isma'eel H, Mehio G, et al. Prevalence of thromboembolic events among 8860 patients with thalassaemia major and intermedia in the Mediterranean area and Iran. Thromb Haemost 2006;96(4):488-491

	compared to 0–0.6% in a control group with other pulmonary diseases [153] [154] [155]. Streptococcus pneumoniae and Haemophilus influenzae are particularly likely to cause severe infection post-splenectomy. Malaria and certain other tropical infections also pose a heightened risk, rendering service in tropical regions inadvisable [156]. This means that it is not advisable for people without a spleen to sail in the Tropics. It also means that is is important to vaccinate against Pneumococcus and Haemophilus Influenzae
Consequences	**Individual:** May be life-threatening if urgent medical care is not accessible. **Crew:** Significant impact due to the need to care for and replace the affected seafarer. **Ship:** Operational disruption due to potential diversion, MEDEVAC, or crew replacement.
Unmitigated risk	High, particularly in tropical service or without confirmed immunisation. Usually not acceptable.
Mitigation	Confirmed up-to-date vaccination against Streptococcus pneumoniae and Haemophilus influenzae. Avoidance of tropical service. Access to onboard medical expertise where applicable.
Mitigated risk	**Individual:** Usually acceptable if fully mitigated. **Crew:** Usually acceptable if fully mitigated. **Ship:** Usually acceptable if fully mitigated.
Recommendation	D73 Column 5: Certification only on the basis of specialist assessment. Service should be restricted to vessels with a ship's doctor. A medical certificate must not be issued until vaccination status is confirmed as satisfactory. Individuals' post-splenectomy should not be certified for service in tropical waters due to the elevated risk of severe infection, particularly from malaria.

An overview article on vascular complication can be found in "Blood"[157].

[153] Jais X, Ioos V, Jardim C, et al. Splenectomy and chronic thromboembolic pulmonary hypertension. Thorax 2005;60(12):1031-1034.
[154] Hoeper MM, Niedermeyer J, Hoffmeyer F, Flemming P, Fabel H. Pulmonary hypertension after splenectomy? Ann Intern Med 1999;130(6):506-509.
[155] Bonderman D, Jakowitsch J, Adlbrecht C, et al. Medical conditions increasing the risk of chronic thromboembolic pulmonary hypertension. Thromb Haemost 2005;93(3):512-516
[156] Kesinee Chotivanich, Rachanee Udomsangpetch, Rose McGready, Stephane Proux, Paul Newton, Sasithon Pukrittayakamee, Sornchai Looareesuwan and Nicholas J. White: Central Role of the Spleen in Malaria Parasite Clearance; J Infect Diseases Vol. 15, No 10, 1538-1541.
[157] Shelley E. Crary and George R. Buchanan; Vascular complications after splenectomyu for hematologic disorders. Blood 2009 114: 2861-2868.

Different CAUSES OF REDUCED OR LACKING SPLENIC FUNCTION

Iatrogenic	• Splenic artery embolization • Splenic irradiation • Total or partial splenectomy
Hepatic diseases	• Alcoholic liver disease • Chronic viral hepatitis • Cirrhosis and portal hypertension • Primary biliary cirrhosis
Hematologic diseases	• Acute leukemia • Chronic lymphocytic leukemia • Hematopoietic stem cell transplantation (particularly if associated graft versus host disease) • Lymphoma • Mastocytosis • Myeloproliferative neoplasm • Sickle cell disease (e.g., HbSS, HbSC, HbS-beta thalassemia) • Thalassemia
Vascular impairment	• Celiac artery thrombosis • Splenic artery thrombosis • Splenic vein thrombosis
Gastrointestinal diseases	• Celiac disease • Inflammatory bowel disease • Whipple's disease
Autoimmune diseases	• Antiphospholipid antibody syndrome • Goodpasture's syndrome • Granulomatosis with polyangiitis • Hashimoto's thyroiditis • Polyarteritis nodosa • Rheumatoid arthritis • Sjogren's syndrome • Systemic lupus erythematosus
Infectious diseases	• HIV/AIDS
Infiltrative diseases	• Amyloidosis • Sarcoidosis
Congenital syndromes	• Autoimmune polyendocrinopathy-candidiasis-ectodermal dystrophy (APECED) syndrome • Hypoparathyroidism syndrome • Isolated congenital hyposplenia • Ivemark's syndrome • Normal neonatal state (particularly if birth is premature) • Other congenital or familial syndromes • Stormorken's syndrome
Data from: 1. Di Sabatino A, Carsetti R, Corazza GR. Post-splenectomy and hyposplenic states. Lancet 2011; 378:86. 2. Kirkineska L, Perifanis V, Vasiliadis T. Functional hyposplenism. Hippokratia 2014; 18:7. 3. Rubin LG, Schaffner W. Clinical practice. Care of the asplenic patient. N Engl J Med 2014; 371:349. UpToDate Graphic 119147 Version 2.0	

22.4.3 OTHER DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS

D50-89	Other diseases of the blood and blood-forming organs Spontaneous bleeding, reduced exercise tolerance, low resistance to infections	T – While under investigation P – Chronic coagulation disorders	Case-by-case assessment for other conditions	Case-by-case assessment

22.4.3.1 ACQUIRED THROMBOFILIA - ANTIPHOSPHOLIPID SYNDROME (APS)

Reviewed 2025-11-20

Acquired thrombophilias are not genetic but develop secondary to other conditions or exposures. The main types include antiphospholipid syndrome (APS), malignancy-associated thrombophilia, myeloproliferative neoplasms, and thrombophilia linked to pregnancy, surgery, immobilisation, oestrogen therapy, obesity, smoking, and chronic inflammatory diseases.

In this section we discuss APS. The other types of thrombophilia should be assessed based on specialist advice.

Significance	APS is associated with a high risk of thrombotic, thromboembolic, and obstetric complications. Some patients with APS may experience fluctuations in the International Normalised Ratio (INR), complicating anticoagulation management. This instability may be due to antiprothrombin antibodies, lupus anticoagulants, or reagent variability. Certification should only be considered if INR stability is confirmed and maintained.
Possible medical incident(s)	Acute thrombotic or embolic events (e.g. stroke, pulmonary embolism, myocardial infarction) may occur despite treatment. These events may be life-threatening if access to hospital care is delayed.
General likelihood	In a cohort of 1,000 patients with primary or secondary APS, the following complications were reported[158]: Deep vein thrombosis: 32% Thrombocytopenia: 22% Livedo reticularis: 20% Stroke: 13% Superficial thrombophlebitis: 9% Pulmonary embolism: 9% Fetal loss: 8% Transient ischaemic attack: 7% Haemolytic anaemia: 7% Further findings from the same cohort (mean age 42 years; 82% female; 53% with primary APS; 36% with systemic lupus erythematosus): Mortality: 5.3%, with causes including: Bacterial infection (n = 11) Myocardial infarction (n = 10) Stroke (n = 7) Haemorrhage (n = 6) Catastrophic APS (CAPS) (n = 5)

[158] Cervera R, Piette JC, Font J, et al. Antiphospholipid syndrome: clinical and immunologic manifestations and patterns of disease expression in a cohort of 1,000 patients. Arthritis Rheum 2002; 46:1019.

	Pulmonary embolism (n = 6) Highly variable and dependent on clinical presentation and antibody profile. Patients presenting with CAPS or multisystem involvement have a particularly poor prognosis. Even with treatment (oral anticoagulants or aspirin), the risk of recurrence remains.
Consequences	**Individual:** Significant to serious, particularly if acute complications occur at sea. **Crew:** May be overburdened by care responsibilities or redistribution of duties. **Ship:** Risk of MEDEVAC, diversion, hospitalisation, and crew replacement.
Unmitigated risk	High. The condition is not trivial and requires careful individualised assessment. Unmitigated risk is unacceptable.
Mitigation	Confirmed INR stability over time. Specialist assessment of thrombotic risk and treatment efficacy. Consideration of antibody profile and clinical history. Avoidance of service in remote or medically underserved areas.
Mitigated risk	**Individual:** Usually not acceptable. May be acceptable if fully mitigated. **Crew:** Usually acceptable. **Ship:** Usually not acceptable. May be acceptable if fully mitigated.
Recommendation	APS is generally incompatible with service at sea. Certification may only be considered in exceptional cases, based on specialist advice and confirmed INR stability. Any certificate issued should be time-limited and subject to regular review

22.4.3.2 INHERITED TROMBOPHILIA

Reviewed 2025-11-21

Inherited thrombophilia [159] represents a genetic predisposition to venous thromboembolism (VTE). It is clinically significant as it increases the risk of thrombotic events, particularly in the presence of additional acquired risk factors.

They may cause deep vein thrombosis, pulmonary embolism with a tendency to recurrence.

The Factor V Leiden mutation is the most common inherited cause, accounting for approximately 40–50% of cases. Other major causes include the prothrombin gene mutation and deficiencies of Protein S, Protein C, and antithrombin. Rare causes include dysfibrinogenaemia and Factor XII mutation [160].

The overall incidence of inherited thrombophilia among individuals with DVT ranges from 24–37%, compared with approximately 10% in control populations.

Lifetime relative risk of thrombosis compared with individuals without thrombophilia [161]:

- Protein S deficiency: 8.5-fold higher

[159] Moran J, Baues KA. Managing Thromboembolic risk in patients with hereditary and acquired thrombophilias. Blood (2020) 135 (5): 344-350. https://doi.org/10.1182/blood.2019000917

[160] Mateo J, Oliver A, Borrell M, Sala N, Fontcuberta J: Laboratory evaluation and clinical characteristics of 2,132 consecutive unselected patients with venous thromboembolism--results of the Spanish Multicentric Study on Thrombophilia (EMET-Study). Thromb Haemost. 1997;77(3):444

[161] Martinelli I, Mannucci PM, De Stefano V, et al. Different risks of thrombosis in four coagulation defects associated with inherited thrombophilia: a study of 150 families. Blood 1998; 92:2353.

- Antithrombin deficiency: 8.1-fold higher
- Protein C deficiency: 7.3-fold higher
- Factor V Leiden mutation: 6.7-fold higher (hetereozygous) and 11 (homozygous)
- Homozygous Factor V Leiden mutation: Different studies shows from 13 to 80 fold higher [162].

In the general population, the incidence of VTE is approximately 0.5‰ per year, of which 0.2‰ are idiopathic [163].

Even with an eleven-fold increase in risk (for example, in individuals homozygous for the Factor V Leiden mutation), the absolute annual risk of a first spontaneous venous thromboembolism (VTE) remains relatively low, at approximately 0.2%.

Not all VTEs result in sudden incapacitation. Accordingly, the probability that an individual will be suddenly incapacitated due to an inherited thrombophilia is well below 1% per year. In this context, any likelihood below 2% per year is categorised as very low.

Nevertheless, haematologists generally recommend antithrombotic therapy for the majority of such cases. The examining seafarer's doctor must therefore balance the risk of VTE attributable to the underlying condition against the potential risk of haemorrhage associated with treatment. (See section on medication above.)

22.4.3.3 TESTING FOR INHERITED DISEASES

Reviewed 2025-11-21

Pursuant to the **Norwegian Act No. 56 of 5 August 1994 relating to the application of biotechnology in medicine**, Section 5-2, genetic testing may only be conducted for medical purposes with diagnostic or therapeutic intent.

Interpretation by the Norwegian Health Directorate
It is permissible to utilise genetic test results when there is a substantiated clinical suspicion of a genetic disorder requiring further investigation for treatment purposes.
However, it is not permitted to conduct genetic screening of individuals in the absence of such clinical suspicion.

Implications for Seafarer Medical Certification
- Genetic testing must not be used as a routine screening tool in the certification process.
- Results from prior genetic testing may be considered only if they were obtained in the context of a diagnostic or therapeutic evaluation.

[162] Simone B, De Stefano V, Leoncini E, et al. Risk of venous thromboembolism associated with single and combined effects of factor V leiden, prothrombin 20210A and methylenetethraydrofolate reductase C677T: a meta-analysis involving over 11,000 cases and 21,000 controls. Eur J Epidemiol. 2013;28(8):621-647.
[163] Fowkes FJI, Price JF, Fowkes FGR. Incidence of Diagnosed Deep Vein Thrombosis in the General Population: Systematic Review. Eur J Vas Endovasc Surg 25, 1-5 (2009). doi:10.1053/ejvs.2002.1778, available online at http://www.sciencedirect.com

22.5 E00-90 ENDOCRINE, NUTRITIONAL AND METBOLIC DISEASES

22.5.1 DIABETES MELLITUS

22.5.1.1 DIABETES MELLITUS – INSULIN DEPENDENT

E10	Diabetes – Insulin-dependent Acute impairment from hypoglycaemia. Complications from loss of blood glucose control. Increased likelihood of visual, neurological and cardiac problems.	T – From start of treatment until stabilised P – If poorly controlled or not compliant with treatment. History of hypoglycaemia or loss of hypoglycaemic awareness. Impairing complications of diabetes.	R, L – Subject to evidence of good control, full compliance with treatment and recommendations and good hypoglycaemia awareness. Fit for near-coastal duties without solo watchkeeping. Time limited until next specialist check-up. Must be under regular surveillance.	Not applicable

Reviewed 2025-11-21

Significance	Diabetes mellitus types I and II are associated with broadly similar complications, although prevalence and severity differ. Long-term complications include increased risk of cardiovascular disease, neuropathy, retinopathy, and peripheral vascular disease. In type I diabetes, insulin therapy is essential. Achieving appropriate insulin dosing to avoid both hyperglycaemia and hypoglycaemia is challenging, requiring patients to be competent in self-monitoring and frequent testing.
Possible medical incident(s)	**Hyperglycaemia:** Threatens alertness, concentration, and reaction times, and may progress to reduced or lost consciousness. **Hypoglycaemia:** Represents a greater safety risk at sea than hyperglycaemia. Severe hypoglycaemia can cause unconsciousness, seizures, temporary or permanent brain damage, and even death. Symptoms often occur suddenly and may include cold sweats, pallor, exhaustion, tremors, anxiety, confusion, drowsiness, extreme hunger, headaches, nausea, palpitations, and visual disturbances.
General likelihood	Patients with type I diabetes experience frequent episodes of asymptomatic hypoglycaemia, with plasma glucose <3 mmol/L for up to 10% of the time [164]. On average, two symptomatic episodes occur per week, amounting to thousands over a lifetime, with up to three severe episodes annually. Severe hypoglycaemia has been reported at rates of 62–170 episodes per 100 patient-years in type I diabetes.[165] [166] [167].

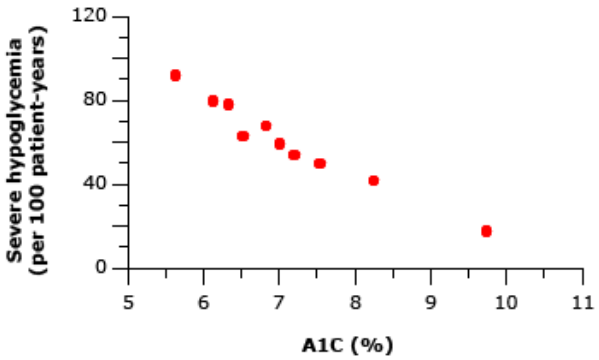
[164] Cryer, PE. Hypoglycemia in diabetes. Pathophysiology, prevalence, and prevention. American Diabetes Association, Alexandria VA, 2009

[165] Cryer PE, Axelrod L, Grossman AB, Heller SR, Montori VM, Seaquist ER, Service FJ, Endocrine Society: Evaluation and management of adult hypoglycemic disorders: an Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab. 2009;94(3):709

[166] Seaquist ER, Anderson J, Childs B, et al. Hypoglycemia and diabetes: a report of a workgroup of the American Diabetes Association and the Endocrine Society. J Clin Endocrinol Metab 2013; 98:1845.

[167] Pedersen-Bjergaard U, Thorsteinsson B. Reporting Severe Hypoglycemia in Type 1 Diabetes: Facts and Pitfalls. Curr Diab Rep 2017; 17:131.

Continuous glucose monitoring (CGM) reveals clinically significant hypoglycaemia (<3 mmol/L) every 2–6 days, more frequently than previously estimated by self-report or fingerstick testing[168] [169] [170] [171].
The Diabetes Control and Complications Trial (DCCT) demonstrated a progressive increase in severe hypoglycaemia at lower HbA1c levels during intensive insulin therapy [172].



Randomised controlled trials in both type I [173] [174] and type II [175] [176] [177] diabetes consistently shows two- to threefold higher rates of severe hypoglycaemia in patients treated to lower HbA1c targets.
Factors increasing likelihood for hypoglycaemia include:
Hypoglycaemia-associated autonomic failure (impaired awareness and defective counter regulation)
Longer duration of diabetes
Older age
Lower glycaemic targets achieved with medication
Erratic or missed meals, low carbohydrate intake
Recent history of severe hypoglycaemia
Exercise
Alcohol consumption
Chronic kidney disease
Malnutrition with glycogen depletion

[168] Heinemann L, Freckmann G, Ehrmann D, et al. Real-time continuous glucose monitoring in adults with type 1 diabetes and impaired hypoglycaemia awareness or severe hypoglycaemia treated with multiple daily insulin injections (HypoDE): a multicentre, randomised controlled trial. Lancet 2018; 391:1367.
[169] Agesen RM, Kristensen PL, Beck-Nielsen H, et al. Effect of Insulin Analogs on Frequency of Non-Severe Hypoglycemia in Patients with Type 1 Diabetes Prone to Severe Hypoglycemia: Much Higher Rates Detected by Continuous Glucose Monitoring than by Self-Monitoring of Blood Glucose-The HypoAna Trial. Diabetes Technol Ther 2018; 20:247.
[170] Forlenza GP, Li Z, Buckingham BA, et al. Predictive Low-Glucose Suspend Reduces Hypoglycemia in Adults, Adolescents, and Children With Type 1 Diabetes in an At-Home Randomized Crossover Study: Results of the PROLOG Trial. Diabetes Care 2018; 41:2155.
[171] Riddlesworth T, Price D, Cohen N, Beck RW. Hypoglycemic Event Frequency and the Effect of Continuous Glucose Monitoring in Adults with Type 1 Diabetes Using Multiple Daily Insulin Injections. Diabetes Ther 2017; 8:947.
[172] Data from: Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. N Engl J Med 1993; 329:977. Source: UpToDate accessed 2020-04-14
[173] Gubitosi-Klug RA, Braffett BH, White NH, et al. Risk of Severe Hypoglycemia in Type 1 Diabetes Over 30 Years of Follow-up in the DCCT/EDIC Study. Diabetes Care 2017; 40:1010.
[174] Hypoglycemia in the Diabetes Control and Complications Trial. The Diabetes Control and Complications Trial Research Group. Diabetes 1997; 46:271.
[175] Abraira C, Duckworth WC, Moritz T, VADT Group. Glycaemic separation and risk factor control in the Veterans Affairs Diabetes Trial: an interim report. Diabetes Obes Metab 2009; 11:150.
[176] Action to Control Cardiovascular Risk in Diabetes Study Group, Gerstein HC, Miller ME, et al. Effects of intensive glucose lowering in type 2 diabetes. N Engl J Med 2008; 358:2545.
[177] ADVANCE Collaborative Group, Patel A, MacMahon S, et al. Intensive blood glucose control and vascular outcomes in patients with type 2 diabetes. N Engl J Med 2008; 358:2560.

	More than half of iatrogenic hypoglycaemic episodes, including severe events, occur at night [178] [179]. Nocturnal hypoglycaemia is less common with rapid-acting insulin analogues compared to long-acting formulations. Continuous subcutaneous insulin infusion (CSII) alone does not consistently reduce hypoglycaemia compared with basal-bolus regimens [180] [181]. However, CSII combined with CGM, particularly with threshold-suspend or predictive low-glucose suspend features, has been shown to reduce nocturnal hypoglycaemia [182]. Severe hypoglycaemia has been reported in approximately 6% of patients treated with long-acting insulin such as detemir (Levemir®) [183].
Consequences	**Individual:** From minor to serious, depending on individual factors **Crew:** Generally minor **Ship:** Minor to significant, depending on the role and responsibilities of the affected individual.
Unmitigated risk	A high likelihood of hypoglycaemic episodes, including severe events, constitutes an unacceptable risk in individuals receiving insulin therapy unless appropriate mitigation is in place. Conversely, failure to administer insulin will inevitably result in hyperglycaemia over time. Accordingly, the unmitigated risk is deemed **unacceptable**.

22.5.1.2 DIABETES MELLITUS – NON-INSULIN DEPENDENT

E11-14	Diabetes – Non-insulin treated, on other medication Progression to insulin use, increased likelihood of visual, neurological and cardiac problems.	T – Distant waters and watchkeeping until stabilised P – Impairing complications of diabetes	R – Until stabilised: Near-coastal waters. Non-watchkeeping duties. R – If minor side effects from medication or when using sulphonylureas: Near-coastal waters. Non-watchkeeping duties. L – Time limited if compliance with treatment and advice poor or medication needs frequent review. Check diet, weight and cardiovascular risk.	When stabilised, in the absence of impairing complications
E11-14	Diabetes – Non-insulin treated, on diet Progression to insulin use,	T – Distant waters and watchkeeping until stabilised	R – Until stabilised: Near-coastal waters. Non-watchkeeping duties. L – Time limited if compliance with advice poor or there is need of	When stabilised, in the absence of impairing complications

[178] Cryer PE. Hypoglycemia in Diabetes. Pathophysiology, Prevalence, and Prevention, 3rd ed. American Diabetes Association. Alexandria 2016
[179] Guillod L, Comte-Perret S, Monbaron D, et al. Nocturnal hypoglycaemias in type 1 diabetic patients: what can we learn with continuous glucose monitoring? Diabetes Metab 2007; 33:360.
[180] REPOSE Study Group. Relative effectiveness of insulin pump treatment over multiple daily injections and structured education during flexible intensive insulin treatment for type 1 diabetes: cluster randomised trial (REPOSE). BMJ 2017; 356:j1285.
[181] Fatourechi MM, Kudva YC, Murad MH, et al. Clinical review: Hypoglycemia with intensive insulin therapy: a systematic review and meta-analyses of randomized trials of continuous subcutaneous insulin infusion versus multiple daily injections. J Clin Endocrinol Metab 2009; 94:729.
[182] Benkhadra K, Alahdab F, Tamhane SU, et al. Continuous subcutaneous insulin infusion versus multiple daily injections in individuals with type 1 diabetes: a systematic review and meta-analysis. Endocrine 2017; 55:77.
[183] Source: Felleskatalogen, Levemir® monograph

	increased likelihood of visual, neurological and cardiac problems.		frequent controls. Check diet, weight and vascular risk factor control.	

Reviewed 2025-11-21

Significance	In principle, the same factors that make type I diabetes clinically important also apply to type II diabetes, although generally to a lesser extent. Type II diabetes accounts for over 90% of all cases worldwide.
Possible medical incident(s)	(See description under type I diabetes.) **Acute hyperglycaemia or hypoglycaemia** compromising judgement, reaction times, concentration, alertness, and decisiveness. **Long-term complications** leading to acute events such as stroke or myocardial infarction.
General likelihood	The global prevalence of diabetes is estimated at 2.8%, with rising rates in the Western world in parallel with increasing body mass index (BMI).[184] Patients with diabetes have a very high likelihood of having co-occurring obesity, lipid abnormalities and high blood pressure[185] [186]. Hypoglycaemia is substantially less frequent in type II diabetes compared with type I. However, patients treated with insulin, sulfonylureas, or meglitinides have a higher likelihood of hypoglycaemia than those managed with diet or other medications [187] [188]. Hypoglycaemia is more common with long-acting sulfonylureas (e.g. glibenclamide) compared with shorter-acting agents (e.g. glipizide, glimepiride, gliclazide) [189]. Certain agents do not cause hypoglycaemia alone [190] [191], but increase risk when combined with insulin or insulin secretagogues [192]: Metformin Alpha-glucosidase inhibitors Thiazolidinediones GLP-1 receptor antagonists DPP-4 inhibitors

[184] Wild S, Roglic G, Green A, et al. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. Diabetes Care. 2004;27:1047-1053
[185] National Collaborating Centre for Chronic Conditions. Type 2 diabetes: national clinical guideline for management in primary and secondary care (update). London: Royal College of Physicians, 2008. http://www.nice.org.uk/nicemedia/pdf/CG66diabetesfullguideline.pdf (last accessed 25 March 2010 - Narayan KM, Boyle JP, Thompson TJ, et al. Lifetime risk for diabetes mellitus in the United States. JAMA. 2003;290:1884-1890
[186] DeFronzo RA. Pathogenesis of type 2 diabetes mellitus. Med Clin North Am. 2004;88:787-835
[187] Seaquist ER, Anderson J, Childs B, et al. Hypoglycemia and diabetes: a report of a workgroup of the American Diabetes Association and the Endocrine Society. J Clin Endocrinol Metab 2013; 98:1845.
[188] Cryer PE. Hypoglycemia in Diabetes. Pathophysiology, Prevalence, and Prevention, 3rd ed. American Diabetes Association. Alexandria 2016
[189] Gangji AS, Cukierman T, Gerstein HC, et al. A systematic review and meta-analysis of hypoglycemia and cardiovascular events: a comparison of glyburide with other secretagogues and with insulin. Diabetes Care 2007; 30:389.
[190] Phung OJ, Scholle JM, Talwar M, Coleman CI. Effect of noninsulin antidiabetic drugs added to metformin therapy on glycemic control, weight gain, and hypoglycemia in type 2 diabetes. JAMA 2010; 303:1410.
[191] Vasilakou D, Karagiannis T, Athanasiadou E, et al. Sodium-glucose cotransporter 2 inhibitors for type 2 diabetes: a systematic review and meta-analysis. Ann Intern Med 2013; 159:262.
[192] Cryer PE. Hypoglycemia in Diabetes. Pathophysiology, Prevalence, and Prevention, 3rd ed. American Diabetes Association. Alexandria 2016

	SGLT2 inhibitors The frequency of hypoglycaemia increases over time as patients approach the insulin-deficient end of the type II diabetes spectrum.[193].
Consequences	**Individual**: Sudden hypoglycaemia can compromise judgement, reaction times, concentration, and decisiveness, leading to unsafe behaviour. If cannot be treated properly on board, evacuation may be (urgently) needed. **Crew impact**: Temporary incapacitation may require diversion of crew resources to provide assistance, potentially reducing operational efficiency. **Ship operations:** If occurring during watch-keeping or safety-critical duties, hypoglycaemia could result in navigational errors, delayed emergency response, or accidents. Hyperglycaemia may cause fatigue and reduced vigilance, increasing the risk of mishandling equipment or overlooking hazards. Severe events (e.g. seizures, unconsciousness) could necessitate medical evacuation, disrupting voyage plans and creating operational risk.
Unmitigated risk	**Individual:** Usually unacceptable without treatment. **Crew:** Could be acceptable **Ship:** Usually unacceptable
Mitigation	Adhering to treatment prescribed by the treating physician with stable blood glucose levels and no episodes of hypoglycaemia and sufficiently treated comorbidities
Risk assessment following consideration of mitigation	**Individual:** From unacceptable to fully acceptable, depending on disease control and comorbidities**.** **Crew:** Usually acceptable. **Ship:** From acceptable to unacceptable, depending on condition and role.
Recommendation	Functional ability varies widely among individuals with diabetes; statistical averages are insufficient for risk assessment. An individualised evaluation is imperative to determine whether a person constitutes an unacceptable safety risk or fulfils the requirements of section 1 of the Regulations. Documented stable control, absence of hypoglycaemic events, and compliance with treatment are critical factors in determining suitability for service.

[193] UpToDate: Hypoglycemia in adults with diabetes mellitus. Magnitude of the problem, type 2 diabetes. Accessed 2020-04-14.

22.5.2 OBESITY AND OVERWEIGHT

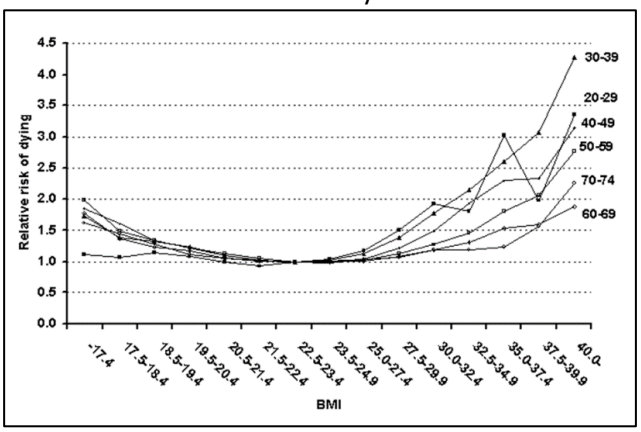
E65-68	Obesity/abnormal body mass – high or low Accident to self, reduced mobility, reduced exercise tolerance. Increased likelihood of diabetes, cardiovascular diseases and arthritis.	T – If safety-critical duties cannot be performed, physical capability or exercise tolerance is poor. Measures have been implemented to improve physical capability and exercise tolerance with a prospect of improvement. P – If safety-critical duties cannot be performed, physical capability or exercise tolerance is poor. Attempts to improve the situations have failed. NB: Body mass index (BMI) is a useful indicator of when additional assessment of physical assessment is needed. BMI should not form the sole basis for decisions on unfitness. In the event of BMI over 35, testing is mandatory.	R, L – Time limited and restricted to near-coastal waters or to restricted duties if the person is unable to perform certain tasks but able to meet routine and emergency capabilities for assigned safety-critical duties.	Physical capability and exercise tolerance performance is average or better, weight steady or reducing and no co-morbidity

Reviewed 2025-11-24

Significance	Overweight and obesity are common among seafarers and represent a major health and safety concern. The significance lies in the potential impairment of physical capabilities, increased risk of disease, and operational challenges in emergency situations. While BMI is a useful screening tool for identifying individuals who require closer examination, it is not a precise predictor of cardiovascular risk. It is, however, important to remember that this is just an index regarding body size, not a good tool for assessing risk or performance. There are, for example, large differences between Caucasians and Asians, and it is being debated whether other limits should be used in Asia. BMI is a poor predictor of cardiovascular risk related to being overweight or obese (ROC value is 0.64 for males and 0.59 for females). It is, however, better in predicting impairment of working capacity, and a high BMI is a good reason to examine more closely. For all practical purposes the seafarer's doctor will be able to use BMI in order to find the people who there is reason to examine more closely.
Possible medical incident(s) and effects	Cardiovascular events: myocardial infarction, stroke, sudden cardiac arrest. Metabolic disorders: diabetes, dyslipidaemia, hypertension, glucose intolerance. Respiratory conditions: obstructive sleep apnoea. Musculoskeletal effects: osteoarthritis, gout, hernia, gallstones, varicosities. Oncological risks: colon, breast, oesophageal, uterine, ovarian, kidney, pancreatic cancers. Psychological effects: depression, reduced resilience. Post-bariatric surgery complications: incisional hernia, internal hernia, small bowel obstruction. Reduced physical performance: Impaired mobility, strength, and endurance. Difficulty performing routine and emergency duties. Challenges fitting into survival equipment (lifeboats, suits, seatbelts).

	Increased likelihood of requiring assistance or evacuation, thereby posing risks to crew and ship safety. A body weight exceeding 120 kg may rapidly give rise to operational challenges should the individual become incapacitated and requires assisted transfer. A body weight above 130 kg shall not be approved unless it has been specifically evaluated by the appellate body, and an exemption have been granted [194].
General likelihood	Cardiovascular risk increases by 5% (men) and 7% (women) per BMI unit [195]. Total mortality increases by 30% for each 5-point increase of BMI above 25 [196]. The increase in mortality observed with rising body mass index (BMI) is primarily attributable to cardiovascular disease. Mean survival is reduced by two to four years at a BMI of 30–35 kg/m², and by eight to ten years at a BMI of 40–45 kg/m²; this reduction is comparable to the effects of smoking. However, evidence indicates that the risks associated with overweight and obesity diminish with advancing age. In individuals over the age of 55, no significant increase in mortality has been demonstrated [197]. Being moderately overweight has been found to carry little significance as a risk factor, provided that physical fitness is maintained [198]. Both a reduction in mortality and a marked improvement in conditions associated with overweight and obesity — such as hypertension, insulin resistance, and an adverse lipoprotein profile — can be achieved through enhanced physical fitness, independent of weight loss [199] [200]. General risk considerations alone cannot be used to determine whether a person is fit for duty. There are substantial individual variations, and an individualised risk assessment is required. This should evaluate the ability to perform routine and emergency duties, and estimate the likelihood of the individual becoming unwell, needing to transfer duties to others, requiring treatment on board, or necessitating evacuation. Only on this basis can a health declaration be issued. Where obesity is identified, the examining medical practitioner must record the individual's physical capabilities, assess body size, and evaluate the risk of

[194] Guide to Regulations concerning health requirements for persons working on installations in the petroleum industry at sea, section 16.6.2 – page 32. (IS-1879)
[195] Kenchaiah S, Evans JC, Levy D, et al. Obesity and the risk of heart failure. N Engl J Med 2002; 347: 305-13).
[196] Prospective Studies Collaboration, Whitlock G, Lewington S, Sherliker P, et al. Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies. Lancet 2009; 373: 1083-96
[197] Bender R, Føckel CH, Trautner C, Spraul M, Berger M. Effect of Age on Excess Mortality in Obesity. JAMA 1999; 281:1498-1504
[198] Gaesser GA, Rich RG. Effects of high- and low-intensity exercise training on aerobic capacity and blood lipids. Med Sci Sports Exerc 1984; 16: 269-74
[199] Martin WH 3d, Dalsky GP, Hurley BF, Matthews DE, Bier DM, Hagberg JM et al. Effect of endurance training on plasma free fatty acid turnover and oxidation during exercise. Am J Physiol 1993; 265: E708 - 14
[200] Bergman BC, Brooks GA. Respiratory gas-exchange ratios during graded exercise in fed and fasted trained and untrained men. J Appl Physiol 1999; 86: 479 - 87

	disease associated with obesity.  Ref: Engeland A, Bjørge T, Selmer RM, Tverdal A. Height and body mass index in relation to total mortality. Epidemiology 2003; 14: 293-9. Hans Th Waaler: height, weight and mortality. The Norwegian Experience. Rapport 4, 1984, Statens institututt for folkehelse.
Consequences	**Individual:** • Reduced fitness, mobility, and endurance. • Increased risk of sudden incapacitation. • Difficulty meeting performance requirements. **Crew:** • Redistribution of duties increases workload. • Potential need to assist in evacuation or medical care. **Ship:** • Possible diversion from planned route for medical evacuation. • Safety compromised if crew member cannot perform duties. • Operational delays and increased costs.
Unmitigated risk	**Individual:** ranges from minor to serious depending on BMI and comorbidities. **Crew**: minor but present due to increased workload. **Ship:** minor to significant, especially if evacuation or diversion is required
Mitigation	Lifestyle interventions: Improved physical fitness, smoking cessation Monitoring and management of comorbidities
Mitigated risk	**Individual:** From acceptable to not acceptable **Crew:** From acceptable to not acceptable **Ship:** From acceptable to not acceptable
Recommendation	Physical testing should be undertaken for all individuals with a body mass index (BMI) greater than 30 and is mandatory for those with a BMI exceeding 35. Concomitant medical conditions should also be taken into account. When an individual is found to be obese, it is essential to consider and record the following factors: Physical abilities: Mobility Strength Fitness No definitive decision has yet been made regarding the preferred method for assessing fitness. The chosen method should be standardised, ensuring comparability and verifiability, with results expressed in measurable values.

	Applicable methods include the Chester Step Test, Harvard Step Test, treadmill test, exercise bicycle test, stress test electrocardiogram (ECG), and measurement of oxygen uptake. Cardiovascular risk: Presence of diabetes or lipid abnormalities Concurrent smoking? Family history of cardiovascular disease? Actual body size: Ability to pass through a manhole Ability to pass through a helicopter window Ability to fasten a seatbelt in a free-fall lifeboat Ability to don a survival suit Feasibility of securing the individual on a stretcher for evacuation Feasibility of carrying the individual in the event of illness or injury Bariatric surgery is increasingly common in many countries and is indicated for patients with a BMI greater than 40, or greater than 35 with significant comorbidities, in whom non-operative therapies have proved unsuccessful. The procedures may achieve restriction, malabsorption, or both. Once the individual has recovered from surgery, one of the principal ongoing risks is that of hernia [201]. Hernias may be incisional or internal, the latter frequently resulting in small bowel obstruction (SBO). Incisional hernias occur more frequently following open gastric bypass (GBP), with an incidence of approximately 20 per cent [202], whereas laparoscopic gastric bypass (LGBP) is associated with a much lower incidence of incisional hernia (0.2 per cent) [203]. Internal hernias, however, occur more commonly after LGBP than after open procedures, and represent a significant clinical problem, as internal hernia is the most frequent cause of SBO following LGBP. Retrospective reviews have reported the incidence of SBO after LGBP to be between 1.8 and 9.7 per cent. Patients most often present with abdominal pain, and may also exhibit symptoms of bowel obstruction. The time of presentation varies considerably, from within one week of the initial operation to up to three years postoperatively, although the majority of cases occur between six and 24 months after surgery [204]. Accordingly, during the first two years following LGBP the risk of SBO is moderate, and it is advisable to restrict service to coastal waters, where medical care can be accessed promptly in the event of symptom onset.

[201] http://bariatrictimes.com/internal-hernia-after-laparoscopic-gastric-bypass-a-review-of-the-literature/comment-page-1/
[202] Sugerman HJ, Kellum JM, Jr., Reines HD, et al. Greater risk of incisional hernrecurrence with prefascial polypropylene mesh. Am J Surg 1996;171(1):80–4.
[203] Rosenthal RJ, Szomstein S, Kennedy CI, Zundel N. Direct visual insertion of primary trocar and avoidance of fascial closure with laparoscopic Roux-en-Y gastric bypass. Surg Endosc2007;21(1):124–8.
[204] Capella RF, Iannace VA, Capella JF. Bowel obstruction after open and laparoscopic gastric bypass surgery for morbid obesity. J Am Coll Surg 2006;203(3):328–35.

22.5.3 OTHER ENDOCRINE CONDITIONS

E 00-90 Not listed separately	Other endocrine and metabolic disease (thyroid, adrenal including Addison's disease, pituitary, ovaries, testes) Likelihood of recurrence or complications	T – Until treatment established and stabilized without adverse effects P – If continuing impairment, need for frequent adjustment of medication or increased likelihood of major complications	R, L – Case-by-case assessment with specialist advice if any uncertainty about prognosis or side effects of treatment. Need to consider likelihood of impairing complications from condition or its treatment, including problems taking medication, and consequences of infection or injury while at sea	If medication stable with no problems in taking at sea and surveillance of conditions infrequent, no impairment and very low likelihood of complications Addison's disease: The risks will usually be such that an unrestricted certificate should not be issued

22.5.3.1 ADDISON'S DISEASE

Reviewed 2025-11-27

Significance	The symptoms and signs of adrenal insufficiency depend on the rapidity of adrenal function loss, the extent of mineralocorticoid production, and the degree of physiological stress. The onset is often gradual and may remain asymptomatic, particularly if an Addisonian crisis (acute adrenal failure) is not precipitated by intercurrent disease or stress.
Possible medical incident(s)	Addisonian crisis
General likelihood	Such a crisis may occur in the following situations: • In a previously undiagnosed patient with primary adrenal failure who is exposed to severe infection or other acute stress. • In a patient with known adrenal failure who fails to increase the dosage of glucocorticoids during infection or stress, or who experiences prolonged vomiting due to gastrointestinal infection or other gastrointestinal disease. • Following bilateral adrenal infarction or bilateral adrenal haemorrhage. • On rare occasions, in secondary or tertiary adrenal failure (for example, following acute cortisol deficiency due to pituitary infarction). • In patients were sudden discontinuation of glucocorticoid therapy results in secondary adrenal failure.
Consequences	An Addisonian crisis requires urgent intravenous glucocorticoid and electrolyte therapy. Immediate hospitalisation is essential. The condition typically stabilises within two to three days. **Individual:** Unable to work, requiring immediate treatment and hospitalisation unless on board a vessel equipped with a doctor and the necessary facilities for appropriate management. **Crew:** Need for replacement of the affected individual; burdensome treatment responsibilities; risks associated with medical evacuation. **Ship:** Reallocation of crew, possible diversion, crew replacement, and potential delay or discontinuation of operations.

Unmitigated risk	**Individual:** Not acceptable **Crew:** Not acceptable **Ship:** Not acceptable
Mitigation	Restriction of sailing area. Strict adherence to treatment and follow-up by a specialist or treating physician. Notification of the ship's master regarding the condition. Training of relevant crew members in the recognition and management of Addisonian crisis. Availability of appropriate medicines for the treatment of Addisonian crisis.
Mitigated risk	With the implementation of mitigating measures, the risk may be considered acceptable. However, certain conditions can only be determined by the appellate body.
Recommendation	If a medical certificate is issued, the trade area should be restricted to near-coastal waters

22.6 F 00-99 MENTAL, COGNITIVE AND BEHAVIOURAL DISORDERS

22.6.1 ALCOHOL ABUSE AND DEPENDENCY

F 10	Alcohol abuse (dependency) Recurrence, accidents, erratic behaviour/ safety performance	T – Until investigated and stabilized and criteria for fitness met. Until one year after initial diagnosis or one year after any relapse P – If persistent or there is co-morbidity likely to progress or recur while at sea	R, L – Time limited, not to work as master in charge of vessel or without close supervision and continuing medical monitoring, provided that: treating physician reports successful participation in rehabilitation programme; and there is an improving trend in liver function tests	After three years from end of last episode without relapse and without co-morbidity

Reviewed 2025-11-27

Significance	Alcohol is a major contributor to morbidity and mortality from trauma [205], primarily in relation to Blood Alcohol Concentration (BAC). In Norway, the legal BAC limit for driving is 0.02 per cent, although this threshold varies between countries.
Possible medical incident(s)	Simulated driving ability is impaired at BAC levels as low as 0.02 per cent [206] nd the risk of involvement in a collision doubles at a BAC of only 0.05 per cent [207]. Alcohol intake is also associated with increased severity of injury in motor vehicle accidents [208]. The risk of driving accidents is greatest during the first two years of alcohol exposure [209]. Impairment in simulated flying ability has

[205] Vinson DC, Mabe N, Leonard LL, et al. Alcohol and injury. A case-crossover study. Arch Fam Med 1995; 4:505
[206] LOOMIS TA, WEST TC. The influence of alcohol on automobile driving ability; an experimental study for the evaluation of certain medicological aspects. Q J Stud Alcohol 1958; 19:30.
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[208] Híjar M, Flores M, López MV, Rosovsky H. Alcohol intake and severity of injuries on highways in Mexico: a comparative analysis. Addiction 1998; 93:1543.
[209] Asch T, Levy D. The minimum legal drinking age and traffic fatalities. Rutgers University, NIAAA 1986.

	been demonstrated at a BAC of 0.04 per cent in pilots [210]. Alcohol use is linked to injuries sustained during the operation of boats [211], bicycles [212] [213] and snowmobiles [214]. A number of maritime accidents have occurred due to crew members being under the influence of alcohol [215] [216]. Falls, drowning, burns, hypothermia, and occupational injuries are more prevalent among drinkers, particularly heavy drinkers [217].
General likelihood	An analysis of 1,150 respondents from the 1990 National Alcohol Survey (USA) indicated that the likelihood of injury increases even with the consumption of a single drink daily [218]. In summary, there is no safe level of alcohol use when operating potentially dangerous equipment. A study conducted in the United States demonstrated the following outcomes when airline pilots performed routine simulator tasks under three alcohol test conditions: **First test:** Prior to alcohol ingestion, 10% failed to perform all tasks correctly. **Second test:** At a BAC of 0.10/100 ml, 89% failed to perform all tasks correctly. **Third test:** Fourteen hours later, after complete elimination of alcohol, 68% still failed to perform all tasks correctly [219]. There is a considerable safety risk associated with individuals who consume alcohol only during shore leave, or those undergoing treatment for alcohol abuse and dependency. The seafarer's doctor must also assess the likelihood of concomitant somatic, psychiatric, and cognitive disorders, which are known to accompany heavy alcohol consumption. **Likelihood of relapse:** Evidence regarding remission and relapse is comprehensively reviewed in Rates and *Predictors of Relapse after Natural and Treated Remission from Alcohol Use Disorders* by Rudolf H. Moos and Bernice S. Moos (2006) [220]. Among treated individuals, short-term remission rates vary between 20% and 50%, depending on disorder severity and remission criteria [221] [222]. Initial studies suggested that between 5% and 45% of untreated individuals may achieve some improvement or remission [223] [224]. Subsequent studies estimated untreated remission rates at 50% to 80% or higher, though these focused largely on general population or media-recruited

[210] Morrow D, Leirer V, Yesavage J, Tinklenberg J. Alcohol, age, and piloting: judgement, mood, and actual performance. Int J Addict 1991; 26:669.
[211] Mengert, P, Sussman, ED, DiSario, R. A study of the relationship between the risk of fatality and blood alcohol concentration of recreational boat operators. Report CG-D-09-92. U.S. Coast Guard, Washington DC 1992.
[212] Olkkonen S, Honkanen R. The role of alcohol in nonfatal bicycle injuries. Accid Anal Prev 1990; 22:89.
[213] Li G, Baker SP, Smialek JE, Soderstrom CA. Use of alcohol as a risk factor for bicycling injury. JAMA 2001; 285:893.
[214] Waller J, Lamborn K. Snowmobiling: Characteristics of owners, patterns of use and injuries. Accid Anal Prev 1975; 7:213.
[215] EMSA: MARITIME ACCIDENT REVIEW 2009
[216] Drazen Cuculica, Alan Bosnara, Valter Stembergaa, Miran Cokloa, Nebojsa Nikolicb, Emina Grgurevicc: Interpretation of blood alcohol concentration in maritime accidents – A case report. Forensic Science Internatioanl Supplement Series 2009; Vol 1:1; 36-37
[217] Romelsjo A. Alcohol consumption and unintentional injury, suicide, violence, work performance, and inter-generational effects. In: Alcohol and Public Policy: Evidence and Issues, Holder HD, Edwards G (Eds), Oxford University Press, New York 1995. p.114.
[218] Cherpitel CJ, Tam T, Midanik L, et al. Alcohol and non-fatal injury in the U.S. general population: a risk function analysis. Accid Anal Prev 1995; 27:651.
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[221] Miller WR, Walters ST, Bennett ME. How effective is alcoholism treatment in the United States? J Stud Alcohol 2001;62: 211–20
[222] Monahan S, Finney J. Explaining abstinence rates following treatment for alcohol abuse. A quantitative synthesis of patient, research design, and treatment effects. Addiction 1996;91: 787–805.
[223] Armor DJ, Meshkoff JE. Remission among treated and untreated alcoholics. Adv Subst Abuse 1983;3: 239–69
[224] Roizen R, Cahalan D, Shanks P. 'Spontaneous remission' among untreated problem drinkers. In: KandelDB, editor. Longitudinal research on drug use: empirical findings and methodological issues. Washington, DC: Hemisphere; 1978, pp. 197–221.

	samples, often involving individuals with less severe or unrecognised problems [225] [226]. A meta-analysis of treatment outcome studies found average short-term abstinence rates of 21% in untreated individuals (waiting-list, no-treatment, or placebo conditions), compared with 43% in treated individuals [227] [228]. Weisner, Matzger, and Kaskutas reported that treated alcohol-dependent individuals achieved higher one-year non-problem use outcomes (40% versus 23%) than untreated individuals [229] . Overall, these studies suggest that treated individuals achieve higher remission rates than untreated individuals, particularly among those who acknowledge their alcohol problems. However, in treated samples, long-term relapse rates have ranged between 20% and 80% [230] [231]. This evidence demonstrates that even with successful treatment, the risk of relapse remains high. Accordingly, specific conditions should be imposed even upon completion of treatment for those issued with a restricted medical certificate.
Consequences	**Individual:** • **Impaired performance:** Reduced reaction time, poor judgement, diminished coordination, and slower decision-making increase the risk of accidents. • **Injuries:** Greater likelihood of falls, burns, hypothermia, drowning, and occupational injuries. • **Health deterioration:** Increased risk of acute medical crises (e.g., withdrawal seizures, delirium tremens) and chronic conditions (liver disease, cardiovascular disease, psychiatric disorders). • **Employment impact:** Loss of fitness for duty, hospitalisation, or medical evacuation; potential revocation of medical certification. • **Legal consequences:** Breach of maritime regulations regarding alcohol limits, leading to disciplinary action or dismissal. **Crew:** **Safety risks:** Other crew members may be endangered by impaired actions or poor decision-making of the affected individual (e.g., mishandling machinery, navigation errors). **Operational burden:** Increased workload for colleagues who must compensate for reduced performance or absence of the impaired crew member. **Evacuation risks:** Medical evacuation of the individual may expose other crew members to danger during emergency procedures. **Psychological impact:** Reduced morale and trust within the crew; potential conflict or breakdown of teamwork. **Training gaps:** Crew may be inadequately prepared to manage alcohol-related medical emergencies, increasing the risk of delayed or ineffective response.

[225] Blomqvist J. Paths to recovery from substance misuse. change of lifestyle and the role of treatment. Subst Use Misuse 1996;31: 1807–52.
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[228] Moyer A, Finney JW. Outcomes for untreated individuals involved in randomized trials of alcohol treatment. J Subst Abuse Treat 2002;23: 247–52.
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[231] Jin H, Rourke SB, Patterson TL, Taylor MJ, Grant I. Predictors of relapse in long-term abstinent alcoholics. J Stud Alcohol 1998;59: 640–6.

	Ship: **Operational disruption:** Impaired crew performance may lead to navigational errors, machinery mishandling, or breaches of safety protocols. **Accidents:** Increased likelihood of collisions, groundings, fires, or other serious incidents. **Legal and regulatory impact:** Breach of maritime law (e.g., BAC limits for watchkeepers) may result in fines, detentions, or loss of certification for the vessel. **Reputation damage:** Incidents linked to alcohol abuse can harm the shipowner's reputation and commercial standing. **Financial consequences:** Costs associated with diversion, delays, crew replacement, medical evacuation, and insurance claims.
Unmitigated risk	**Individual:** Not acceptable **Crew:** Not acceptable **Ship:** Not acceptable
Mitigation	No individual serving on a ship may be under the influence of alcohol or experiencing residual effects following excessive consumption. Individuals with alcohol dependency or abuse must be regarded as temporarily unfit for duty. They should be enrolled in a rehabilitation programme, and only upon receipt of reports confirming successful participation—meaning that the treating physician verifies complete abstinence from alcohol during the programme, supported by objective testing (e.g., PEth).
Mitigated risk	**Individual:** Acceptable only if mitigated. **Crew:** Acceptable only if mitigated. **Ship:** Acceptable only if mitigated.
	The Norwegian Maritime Code No. 39 of 24 June 1994, as last amended by Act No. 16 of 9 May 2014, Section 143, stipulates that the maximum permissible BAC for individuals on bridge watch or performing safety duties, and on ships of 15 metres in length or above, is 0.02 per cent, or an amount of alcohol in the body capable of producing such a BAC. Breath alcohol concentration must not exceed 0.01 per cent. In practice, this means that persons on watch must abstain entirely from alcohol consumption.

22.6.2 DRUG DEPENDENCE/PERSISTENT SUBSTANCE ABUSE				
F 11-19	Drug dependence/persistent substance abuse, includes both illicit drug use and dependence on prescribed medications Recurrence, accidents, erratic behaviour/safety performance	T – Until investigated and stabilized and criteria for fitness met. Until one year after initial diagnosis or one year after any relapse P – If persistent or there is co-morbidity likely to progress or recur while at sea	R, L – Time limited, not to work as master in charge of vessel or without close supervision and continuing medical monitoring, provided that: – treating physician reports successful participation in rehabilitation programme; and – evidence of completion of unannounced/ random programme of drug screening for at	After three years from end of last episode without relapse and without co-morbidity

			least three months with no positives and at least three negatives; and – continuing participation in drug screening programme	

Reviewed 2025-11-27

Significance	Alcohol and drug abuse among employees causes significant and costly problems for business and industry, including lost productivity, workplace injuries, and increased health insurance claims. The effects of drugs are not limited to the immediate period following ingestion; even moderate doses may remain in the body and impair performance for hours or days thereafter. Comparative studies demonstrate that certain concentrations of substances in full blood produce clinical effects equivalent to blood alcohol concentrations of 0.2, 0.5, and 1.2 per mille [232] (below table):
Possible medical incident(s)	Substance abuse in the workplace is associated with: • Tardiness, sleeping on duty, hangover or withdrawal symptoms affecting performance. • Poor decision-making, reduced efficiency, and increased risk of accidents. • Theft, disciplinary procedures, and illegal activities (including sale of illicit drugs). • Lower morale, conflict with co-workers or supervisors, and higher turnover. • Increased need for retraining and replacement of staff.

Substance	Corresponding to 0,2 per mille (µmol/L full blood)	Corresponding to 0,5 per mille (µmol/L full blood)	Corresponding to 1,2 per mille (µmol/L full blood)
Cannabis			
THC	0,004	0,01	0,03
GHB			
GHB	100	300	1200
Hallucinogenes			
Ketamine	0,2	0,500	1,2
LSD	0,003	*	*
Opioids			
Buprenorphine	0,002	*	*
Methadone	0,08	*	*
Morphine	0,03	0,08	0,2
* Connection between substance concentration in full blood and accident risk / driving capabilities is variable or sparsely documented. Pronounced influenced can be noted at low concentrations, especially some time after consumption of substantial amounts of amfetamine/metamfetamine			

[232] Fakta om rusmiddelgrenser i trafikken, http://www.fhi.no/tema/rusmidler/rusmiddelgrenser-i-trafikken - visited 16th July 2014

General likelihood	It's higher likelihood for both male and female employees to have substance abuse problems in male-dominated occupations than in female-dominated occupations [233] [234] [235]. Opioid use disorder is a chronic, relapsing illness. Patients who have completed acute withdrawal have only achieved the first step towards recovery. Long-term maintenance treatment is typically required, either through abstinence-based programmes or medication-assisted treatment with opioid agonists (methadone, buprenorphine) or antagonists (naltrexone) [236]. In Norway, methadone and buprenorphine are used within the regulated programme Legemiddelassistert Rehabilitering (LAR – Medicine Assisted Rehabilitation). Some individuals remain in treatment for many years, even lifelong, while others gradually reduce doses under medical supervision. Some individuals will be on treatment for many years/life-long. Others will reduce the doses in cooperation with the LAR-doctor over months or years. One study (Hauri-Bionda) [237] found no significant adverse impact of low-dose methadone on psychophysical performance in neuropsychological testing, but the study was small and did not directly assess driving or simulator performance. Relapse rates remain high: in one Norwegian study of 352 patients, 45.4% relapsed following treatment [238].
Consequences	**Individual:** Impaired performance (reaction time, judgement, coordination). Increased risk of accidents (falls, burns, drowning, hypothermia). Health deterioration (acute crises such as withdrawal seizures, chronic conditions including liver and cardiovascular disease, psychiatric disorders). Employment impact (loss of fitness for duty, hospitalisation, medical evacuation, revocation of certification). Legal consequences (breach of maritime regulations, disciplinary action, dismissal). **Crew:** Safety risks from impaired actions of the affected individual. Increased workload to compensate for reduced performance or absence. Risks during medical evacuation procedures. Reduced morale, trust, and teamwork. Training gaps in recognising and managing substance-related incidents. **Ship:** Operational disruption (navigational errors, machinery mishandling, breaches of safety protocols). Increased likelihood of collisions, groundings, fires, or other serious incidents. Legal and regulatory consequences (fines, detentions, loss of certification). Reputational damage to shipowners.

[233] Svare GM, Miller L, Ames G. Social climate and workplace drinking among women in a male-dominated occupation. Addict Behav. 2004;29(8):1691-8. doi:10.1016/j.addbeh.2004.03.033
[234] French MT, Maclean JC, Sindelar JL, Fang H. The morning after: alcohol misuse and employment problems. Appl Econ. 2011;43(21):2705-2720
[235] Ames GM, Bennett JB. Prevention interventions of alcohol problems in the workplace. Alcohol Res Health. 2011;34(2):175-87
[236] www.UpToDate.com: Treatment of opioid abuse and dependence, visited 18th July 2014
[237] Hauri-Bionda R, Bär W, Friedrich-Koch A: Driving fitness/driving capacity of patients treated with methadone, Schweiz Med Wochenschr. 1998;128(41):1538
[238] Trond Nordfjærn. Relapse patterrns among patients with substance use disorders. J Subst Use: 2011, Vol. 16;4,313-329

	Financial costs (diversion, delays, crew replacement, medical evacuation, insurance claims).
Unmitigated risk	**Individual:** Unacceptable unless treated and observed without relapse. **Crew:** Unacceptable unless treated and observed without relapse. **Ship:** Unacceptable unless treated and observed without relapse.
Mitigation	No individual serving on a ship may be under the influence of illicit drugs, prescribed dependence-inducing medication, or residual effects following excessive consumption. Individuals with substance abuse or dependency must be regarded as temporarily unfit for duty. They should be enrolled in a rehabilitation programme, and only upon receipt of reports confirming successful participation—verified by the treating physician and supported by random drug screening (minimum three months, with at least three negative results and no positives).
Mitigated risk	**Individual:** Unacceptable unless treated and observation period without relapse. **Crew:** Unacceptable unless treated and observation period without relapse. **Ship:** Unacceptable unless treated and observation period without relapse.
Recommendation	During physical examination, clinicians should be alert to indicators of substance use [239]: • Poor personal hygiene. • Significant weight change. • Injection marks (“track marks”). • Nasal mucosa atrophy or septal perforation (drug inhalation). • Signs of intoxication or withdrawal (slurred speech, unsteady gait, pinpoint pupils, agitation or sedation, tachycardia, conjunctival injection, sweating, watery eyes, runny nose). Testing should be done only on indication. Proper interpretation of the results of a drug-of-abuse screen depends upon the clinical context. Clinicians must consider the type of testing being performed, level of suspicion for drug use or exposure (i.e., pretest probability), purpose of obtaining the test, and likelihood of false-positive and false-negative results. Interpretation must consider the type of test, pre-test probability, purpose, and potential false positives/negatives. Detection windows vary [240]: Amphetamines: 1–3 days Cocaine: 1–3 days Opioids: 1–3 days (methadone 3–10 days) Marijuana: Days to months (chronic users may test positive for months) Benzodiazepines: 1–7 days (diazepam metabolites for weeks) Phencyclidine (PCP): 1–7 days Ketamine: 3–7 days

[239] Dugosh K L et al. Clinical assessment of substance use disorders. UpToDate litterature review current through March 2020. Last updated 25th February 2020. Accessed 28th April 2020.
[240] Hoffmann R J et al. Testing for drug of abuse (DOA). UpToDate literature review through March 2020. Last updated Oct 16, 2018. Accessed 28th April 2020.

	ICD F11–19 provisions cover prescribed medication, including long-term opioid treatment. Current evidence does not demonstrate that individuals receiving LAR treatment have sufficiently low rates of relapse, accidents, or erratic behaviour to be considered safe for ordinary or emergency duties at sea. The likelihood of relapse during LAR treatment is high, and such treatment is therefore regarded as incompatible with work on board ships. Only after completion of opioid treatment may consideration be given to issuing a restricted or unrestricted medical certificate.

22.6.3 PSYCHOSIS

F 20-31	Psychosis (acute) – whether organic, schizophrenic or other category listed in the ICD. Bipolar (manic depressive disorders) Recurrence leading to changes to perception/cognition, accidents, erratic and unsafe behaviour	Following single episode with provoking factors: T – Until investigated and stabilized and conditions for fitness met. At least three months after episode	R, L – Time limited, restricted to near coastal waters and not to work as master in charge of vessel or without close supervision and continuing medical monitoring, provided that: – person has insight; – is compliant with treatment; and – has no adverse effects from medication	Case-by-case assessment at least one year after the episode, provided that provoking factors can and will always be avoided
		Following single episode without provoking factors or more than one episode with or without provoking factors: T – Until investigated and stabilized and conditions for fitness met. At least two years since last episode P – More than three episodes or continuing likelihood of recurrence. Criteria for fitness with or without restrictions are not met	R, L – Time limited, restricted to near coastal waters and not to work as master in charge of vessel or without close supervision and continuing medical monitoring providing that: – the person has insight; – is compliant with treatment; and – has no impairing adverse effects from medication	Case-by-case assessment to exclude likelihood of recurrence at least five years since end of episode if no further episodes; no residual symptoms; and no medication needed during last two years

22.6.3.1 COMPARATIVE OVERVIEW: ICD-10 VS DSM-5

Reviewed 2025-11-27

ICD10-code	ICD10 Term	DSM-5 Corresponding Term
F20	Schizophrenia	Schizophrenia
F21	Schizotypal Disorder	Schizotypal Personality Disorder
F22	Persistent Delusional Disorder	Deulsional Disorder
F23	Acute and Transient Psychotic Disorders	Brief Psychotic Disorder (or Other specified Schizophrenia Spectrum and Other Psychotic Disorder, depending on presentation)

F24	Induced Delusional Disorder	Shared Psychotic Disorder (Folie à deux), now subsumed under Other Specified Schizophrenia Spectrum and Other Psychotic Disorder
F25	Schizoaffective Disorders	Schizoaffective Disorder
F28	Other Nonorganic Psychotic Disorders	Other Specified Schizophrenia Spectrum and Other Psychotic Disorder
F29	Unspecified Nonorganic Psychosis	Unspecified Schizophrenia Spectrum and Other Psychotic Disorder
F30	Manic Episode	Manic Episode Unspecified within Bipolar I Disorder)
F21	Bipolar Affective Disorder	Bipolar I Disorder, Bipolar II Disorder, Cyclothymic Disorder (depending on course and severity)

22.6.3.2 F20 - SCHIZOPHRENIA

Reviewed 2025-11-27

Significance	Schizophrenia is a chronic psychiatric disorder with episodic psychosis (hallucinations, delusions), negative symptoms (amotivation, social withdrawal), and cognitive impairment (attention, executive function). Symptoms can undermine situational awareness, decision-making, communication, and adherence to procedures — key determinants of maritime safety where human performance is central.
Possible medical incident(s)	Acute psychotic episode Disorganised behaviour or thought Cognitive slowing Medication side-effects Self-harm or severe distress Conflict escalation
General likelihood	Although earlier descriptions of schizophrenia suggested that the course was uniformly poor, subsequent evidence has demonstrated considerable heterogeneity [241]. The disorder may present with either abrupt or insidious onset, symptoms may be continuous or intermittent, and outcomes range from poor to relatively favourable. In a long-term course study by Modestin et al., only 20% of individuals exhibited the stereotypical pattern of insidious onset, continuous symptoms, and poor outcome [242]. A number of factors may influence the course of illness: Early intervention and multidisciplinary treatment, which may reduce rates of rehospitalisation, alleviate core symptoms, and enhance interpersonal functioning and everyday living skills [243] [244] [245].

[241] Blueler M. The Schizophrenic Disorders: Long-Term Patient and Family Studies, Yale University Press, London 1978.
[242] Modestin J, Huber A, Satirli E, et al. Long-term course of schizophrenic illness: Bleuler's study reconsidered. Am J Psychiatry 2003; 160:2202.
[243] Dixon LB, Dickerson F, Bellack AS, et al. The 2009 schizophrenia PORT psychosocial treatment recommendations and summary statements. Schizophr Bull 2010; 36:48.
[244] Kane JM, Robinson DG, Schooler NR, et al. Comprehensive Versus Usual Community Care for First-Episode Psychosis: 2-Year Outcomes From the NIMH RAISE Early Treatment Program. Am J Psychiatry 2016; 173:362.
[245] Robinson DG, Schooler NR, Marcy P, et al. Outcomes During and After Early Intervention Services for First-Episode Psychosis: Results Over 5 Years From the RAISE-ETP Site-Randomized Trial. Schizophr Bull 2022; 48:1021.

	Co-occurring substance use disorders, which are associated with a poorer prognosis [246] [247] [248]. External stressors, such as trauma, bereavement, financial difficulties, and interpersonal conflict, which are linked to relapse of psychosis [249]. Deficit form of schizophrenia (characterised by primary and enduring negative symptoms), which is consistently associated with poorer outcomes [250] [251]. Adherence to prescribed medication, which is a critical determinant of stability and prognosis. The suicide rate among individuals with schizophrenia is markedly higher than in the general population, with a standardised mortality ratio of 4.5 (95% CI 4.4–4.7) [252]. The risk is greatest in younger age groups, with a ratio of 10.2 for those aged 18–34 years, compared with 1.5 for those aged over 65 years. Approximately 5% of individuals with schizophrenia die by suicide over the course of their lifetime [253]. Only a small proportion of individuals with schizophrenia are able to function adequately in the workplace, and sustained occupational performance remains uncommon.
Consequences	**Individual:** Injury from impaired judgment, dehydration/malnutrition due to neglect, psychological deterioration, medication mismanagement or self-harming. **Crew:** Increased conflict risk, reduced team coordination, distraction during operations, potential need for emergency interventions. **Ship:** Procedural breaches, navigation or engineering errors, delayed emergency response, reduced compliance with safety checks.
Unmitigated risk	Usually unacceptable. **Acute or unstable symptoms:** High risk for individual, crew, and ship in any safety-critical role (e.g., bridge watch, engine room, cargo ops). **Stable remission with residual cognitive effects:** Moderate risk depending on role complexity, lone working, and emergency demands. **Key determinants:** Symptom status, role safety-criticality, supervision level, and predictability of duties.
Mitigation	**Adherence to treatment:** Confirmed access to prescribed medication, contingency supply, and monitoring for side-effects; avoid initiating sedating changes at sea.

[246] Turner WM, Tsuang MT. Impact of substance abuse on the course and outcome of schizophrenia. Schizophr Bull 1990; 16:87.
[247] Westermeyer J. Comorbid schizophrenia and substance abuse: a review of epidemiology and course. Am J Addict 2006; 15:345.
[248] Rault O, Romeo B, Butlen-Ducuing F, et al. Impact of cannabis use and its cessation on the dosage and the efficacy of antipsychotic drugs in in- and outpatients with schizophrenia taking medication: A systematic review and meta-analysis. J Psychiatr Res 2022; 156:713.
[249] Martland N, Martland R, Cullen AE, Bhattacharyya S. Are adult stressful life events associated with psychotic relapse? A systematic review of 23 studies. Psychol Med 2020; 50:2302.
[250] Strauss GP, Harrow M, Grossman LS, Rosen C. Periods of recovery in deficit syndrome schizophrenia: a 20-year multi-follow-up longitudinal study. Schizophr Bull 2010; 36:788.
[251] Fenton WS, McGlashan TH. Antecedents, symptom progression, and long-term outcome of the deficit syndrome in schizophrenia. Am J Psychiatry 1994; 151:351.
[252] Olfson M, Stroup TS, Huang C, et al. Suicide Risk in Medicare Patients With Schizophrenia Across the Life Span. JAMA Psychiatry 2021; 78:876.
[253] Hor K, Taylor M. Suicide and schizophrenia: a systematic review of rates and risk factors. J Psychopharmacol 2010; 24:81.

	Work restriction: Assign non-safety-critical tasks during early recovery; increase supervision; avoid lone or high-stimulus watchkeeping if attention or perception is compromised. **Sleep and fatigue management:** Protected rest, stable shift patterns, and fatigue controls to reduce relapse risks. **Access to support:** Clear pathways for prompt clinical consultation (telehealth), confidential reporting, and shore-side follow-up at port calls. **Emergency protocols:** Pre-agreed escalation steps for acute behavioural change (remove from safety-critical duty, safe observation, medical contact, diversion decisions) integrated into ship's risk assessments. **Culture and training:** Anti-stigma practices, supervisor training to recognise early signs, and inclusion of mental health in safety planning and drills.
Mitigated risk	Even with the implementation of the possible mitigating factors, the nature of schizophrenia is such that the mitigated risk usually is unacceptable.

22.6.3.3 F21 - SCHIZOTYPAL (PERSONALITY) DISORDER

Reviewed 2025-12-01

Significance	**Nature of condition:** A chronic disorder characterised by pervasive social and interpersonal deficits, cognitive or perceptual distortions, and eccentric behaviour. **Operational relevance:** Unlike schizophrenia, psychotic episodes are less prominent, but odd beliefs, suspiciousness, social withdrawal, and impaired communication can undermine teamwork and situational awareness. **Policy context:** Classified within the schizophrenia spectrum in ICD-10, but considered a personality disorder in DSM-5. For maritime safety, the focus is on functional capacity, interpersonal reliability, and ability to adhere to procedures.
Possible medical incident(s)	• **Interpersonal conflict:** Suspiciousness or paranoid ideation may lead to misinterpretation of colleagues' actions, escalating disputes. • **Communication breakdown:** Eccentric or tangential speech may impair clarity in safety-critical exchanges. • **Stress-related decompensation:** Under operational stress, transient psychotic-like episodes may occur, with impaired judgment. • **Neglect of duties:** Social withdrawal or reduced motivation may result in incomplete tasks or poor vigilance. • **Medication side-effects:** If treated pharmacologically, risks include sedation or cognitive slowing.
General likelihood	The NESARC study identified higher rates of schizotypal (personality) disorder among participants with a lifetime history of other mental disorders [254]: Bipolar I disorder (22.1%), panic disorder with agoraphobia (25.9%), drug dependence (19.4%), and any personality disorder (15.6%). Borderline personality disorder demonstrated the highest prevalence among personality disorders co-occurring with schizotypal personality disorder, with a rate of 56.7%.

[254] Pulay AJ, Stinson FS, Dawson DA, et al. Prevalence, correlates, disability, and comorbidity of DSM-IV schizotypal personality disorder: results from the wave 2 national epidemiologic survey on alcohol and related conditions. Prim Care Companion J Clin Psychiatry 2009; 11:53.

	Conversely, the NESARC study reported the following rates of co-occurring mental disorders in individuals with schizotypal personality disorder: substance use disorder (67.5%), mood disorders (67.6%), anxiety disorders (72.3%), and personality disorders (82.7%). Follow-up studies of children diagnosed with schizotypal personality disorder have indicated that at least half continue to meet diagnostic criteria in later adolescence, while 10–20% subsequently develop schizophrenia or schizoaffective disorder [255]. During periods of heightened psychosocial stress, acute symptomatic exacerbations may occur. These typically manifest as intensified paranoid ideation (which does not reach the level of complexity or elaborate systematisation observed in schizophrenia), increased perceptual disturbances and bodily illusions, worsening social anxiety and/or social withdrawal, and deterioration in self-care [256] [257] [258] [259].
Consequences	**Individual:** Increased stress, anxiety, or transient psychotic-like symptoms; risk of social isolation. **Crew:** Miscommunication, interpersonal tension, reduced cohesion, and potential conflict escalation. **Ship:** Procedural lapses, impaired coordination, and reduced reliability in safety-critical teamwork.
Unmitigated risk	The unmitigated risk is usually unacceptable. **Without support or monitoring:** Moderate risk to interpersonal functioning and operational safety, particularly in roles requiring clear communication and trust. **Acute stress or decompensation:** Risk may rise to high if transient psychotic symptoms impair judgment or cooperation.
Mitigation	Non-safety-critical job tasks Avoid lone watchkeeping or high-stress duties **Clear reporting lines**, supervision, predictable routines to reduce strs and ambiguity **Adherence to prescribed treatment** and availability of telehealth consultation. **Crew training:** Awareness of eccentric behaviours and strategies to maintain professional communication without escalation. **Emergency protocols:** Pre-agreed steps for managing acute behavioural change or transient psychotic-like episodes.

[255] Asarnow JR. Childhood-onset schizotypal disorder: a follow-up study and comparison with childhood-onset schizophrenia. J Child Adolesc Psychopharmacol 2005; 15:395.
[256] Pulay AJ, Stinson FS, Dawson DA, et al. Prevalence, correlates, disability, and comorbidity of DSM-IV schizotypal personality disorder: results from the wave 2 national epidemiologic survey on alcohol and related conditions. Prim Care Companion J Clin Psychiatry 2009; 11:53.
[257] McClure MM, Harvey PD, Bowie CR, et al. Functional outcomes, functional capacity, and cognitive impairment in schizotypal personality disorder. Schizophr Res 2013; 144:146.
[258] Poyurovsky M, Faragian S, Pashinian A, et al. Clinical characteristics of schizotypal-related obsessive-compulsive disorder. Psychiatry Res 2008; 159:254.
[259] Brakoulias V, Starcevic V, Berle D, et al. The clinical characteristics of obsessive compulsive disorder associated with high levels of schizotypy. Aust N Z J Psychiatry 2014; 48:852.

Mitigated risk	Stable presentation, adequate communication, supportive environment: Low to moderate residual risk. Marked suspiciousness, poor communication, or stress intolerance: Moderate to high residual risk; restrict safety-critical duties. **Acute decompensation with psychotic-like symptoms:** High residual risk; immediate removal from safety-critical tasks and activation of medical protocols.
Recommendation	Should a case be presented to the appellate body, the following must be sufficiently described: **Case-by-case clearance:** Require fitness-for-duty assessment focusing on interpersonal reliability and communication. **Role tailoring:** Assign duties compatible with functional capacity; restrict safety-critical roles if suspiciousness, poor communication, or stress intolerance are evident. **Operational safeguards:** Embed monitoring, supervision, and clear escalation protocols into ship safety management systems. **Ongoing review:** Periodic reassessment and prompt evaluation after any incident or symptom change.

22.6.3.4 F22 - DELUSIONAL DISORDERS

Reviewed 2025-01-12

Significance	**Nature of condition:** Delusional disorder is characterised by the presence of one or more persistent delusions, typically persecutory, grandiose, jealous, erotomanic, or somatic in nature, without the broader disorganisation or negative symptoms seen in schizophrenia. **Operational relevance:** Fixed false beliefs can distort judgment, impair trust, and destabilise interpersonal relations. In the confined and safety-critical environment of a ship, this poses direct risks to crew cohesion and operational reliability. **Policy context:** ICD-10 F22 (Persistent Delusional Disorder) corresponds to DSM-5 Delusional Disorder. For occupational risk assessment, the focus is on the impact of delusional thinking on safety, communication, and decision-making.
Possible medical incident(s)	**Interpersonal conflict:** Delusional suspicion of colleagues may escalate into disputes or aggression. **Impaired judgment:** Decisions influenced by persecutory or grandiose beliefs may lead to unsafe actions. **Non-adherence:** Distrust of medical staff or medication may result in discontinuation of treatment. **Stress-related exacerbation:** Operational stress, isolation, or fatigue may intensify delusional conviction. **Emergency situations:** Misinterpretation of alarms or instructions may compromise coordinated response.
General likelihood	Small studies of patients with delusional disorder have reported psychiatric comorbidity rates of 35 to 72 percent [260] [261] [262] [263]. Depression has been the

[260] de Portugal E, Martínez C, González N, et al. Clinical and cognitive correlates of psychiatric comorbidity in delusional disorder outpatients. Aust N Z J Psychiatry 2011; 45:416.
[261] Maina G, Albert U, Badà A, Bogetto F. Occurrence and clinical correlates of psychiatric co-morbidity in delusional disorder. Eur Psychiatry 2001; 16:222.
[262] Marino C, Nobile M, Bellodi L, Smeraldi E. Delusional disorder and mood disorder: can they coexist? Psychopathology 1993; 26:53.
[263] Hsiao MC, Liu CY, Yang YY, Yeh EK. Delusional disorder: retrospective analysis of 86 Chinese outpatients. Psychiatry Clin Neurosci 1999; 53:673.

	most commonly observed co-occurring condition, but anxiety may also be a significant factor. Patients with the persecutory subtype were particularly likely to present with a mood disorder. The distribution of subtypes has been found to be broadly consistent across several cohort studies, with persecutory and jealous subtypes among the most common, and erotomanic and grandiose subtypes among the least. Reported proportions are as follows [264] [265] [266] [267] [268]: Persecutory – 48 percent Jealous – 11 percent Mixed – 11 percent Somatic – 5 percent Not otherwise specified – 23 percent The risk of relapse in individuals with delusional disorder is generally lower than in schizophrenia; however, relapse remains a recognised concern, particularly under conditions of stress or poor treatment adherence. Common triggers include psychosocial stressors (such as interpersonal conflict, isolation, or financial strain), non-adherence to antipsychotic medication, and comorbid conditions including depression, anxiety, and substance misuse. Without treatment, the disorder tends to follow a chronic and unremitting course, with delusions persisting and occasionally worsening over time.[269]
Consequences	**Individual:** Heightened anxiety, impaired self-care, risk of aggression or withdrawal. **Crew:** Distrust, conflict, and impaired teamwork; potential escalation to physical confrontation. **Ship:** Procedural breaches, misinterpretation of orders, compromised emergency response, and reduced operational reliability.
Unmitigated risk	Usually unacceptable. **Persistent delusions without treatment:** High risk to interpersonal functioning and operational safety. **Acute exacerbation:** Very high risk, particularly in safety-critical roles requiring trust and rapid decision-making. **Key determinants:** Severity of delusional conviction, insight, adherence to treatment, and role demands.
Mitigation	**Adherence to treatment:** Ensure access to prescribed antipsychotic treatment; monitor for side-effects. **Role allocation:** Restrict safety-critical duties if delusional suspicion or impaired judgment is evident. **Structured supervision:** Clear reporting lines, predictable routines, and oversight to reduce stress and ambiguity.

[264] Munro A. Delusional Disorder: paranoia and related illness, Cambridge University Press, New York 1999.
[265] Manschreck TC. Delusional disorder and shared psychotic disorder. In: Comprehensive Textbook of Psychiatry, 7th ed, Kaplan HI, Sadock BJ (Eds), Williams and Wilkins, Baltimore, MD 2000. Vol 1, p.1243.
[266] de Portugal E, Martínez C, González N, et al. Clinical and cognitive correlates of psychiatric comorbidity in delusional disorder outpatients. Aust N Z J Psychiatry 2011; 45:416.
[267] Kelly BD. Erotomania : epidemiology and management. CNS Drugs 2005; 19:657.
[268] de Portugal E, González N, Miriam V, et al. Gender differences in delusional disorder: Evidence from an outpatient sample. Psychiatry Res 2010; 177:235.
[269] Marder S et al. Delusional disorder. UpToDate updated 0ct 09, 205. Accessed 2024-01-12.

	Access to support: Telehealth consultation and shore-side follow-up; confidential reporting mechanisms. **Emergency protocols:** Pre-agreed steps for managing acute exacerbations, including removal from duty and medical contact. **Crew awareness:** Training to recognise behavioural changes and de-escalation strategies.
Mitigated risk	Even with implementation of mitigating measures, the risk usually is unacceptable. Stable presentation with treatment adherence and adequate insight: Low to moderate residual risk, depending on role demands. **Persistent delusions with limited insight or poor adherence:** Moderate to high residual risk; restrict safety-critical duties. **Acute exacerbation with persecutory or aggressive behaviour:** High residual risk; immediate removal from safety-critical tasks and activation of medical protocols.
Recommendation	**Case-by-case clearance:** Require fitness-for-duty assessment focusing on delusional severity, insight, and adherence. **Role tailoring:** Assign duties compatible with functional capacity; restrict safety-critical roles if delusional suspicion or impaired judgment is present. **Operational safeguards:** Embed monitoring, supervision, and clear escalation protocols into ship safety management systems. **Ongoing review:** Periodic reassessment and prompt evaluation after any incident, symptom change, or treatment adjustment.

22.6.3.5 F23 - ACUTE AND TRANSIENT PSYCHOTIC DISORDER (BRIEF PSYCHOTIC DISORDER)

Reviewed 2025-12-01

Significance	**Nature of condition:** Acute and transient psychotic disorders (ATPD) are characterised by sudden onset of psychotic symptoms such as delusions, hallucinations, or severe confusion, typically developing within two weeks. **Course:** Episodes are usually short-lived (from days to a few months), with full remission in many cases, though recurrence is possible. **Operational relevance:** The abrupt onset and unpredictability of symptoms pose significant risks in safety-critical maritime environments, where continuous vigilance and reliable functioning are essential. **DSM-5 correspondence:** Closely aligned with Brief Psychotic Disorder or, depending on presentation, Other Specified Schizophrenia Spectrum and Other Psychotic Disorder.
Possible medical incident(s)	**Sudden behavioural change**: Abrupt onset of delusions, hallucinations, or disorganised behaviour during duty. **Impaired judgment:** Unsafe handling of equipment or misinterpretation of instructions. **Disorientation or confusion:** Inability to follow procedures, loss of situational awareness. **Impaired perception or impulsivity**. Accidental injuries and risk to self. Aggression, agitation, or unpredictable behaviour: Affecting crew safety.

General likelihood	Brief psychotic disorder is often a provisional or retrospective diagnosis with a substantial rate of recurrence and subsequent diagnosis of another psychotic disorder or affective disorder with psychosis[270]. It is an uncommon disorder, with a lifetime prevalence of 0.05-2% [271] [272] [273] [274] [275]. There are little systematic data on risk factors for brief psychotic disorder [276]. Symptoms of brief psychotic disorder, by definition, remit within a month [277]. Many individuals who initially met criteria for a brief psychotic disorder have gone on to meet criteria for other psychotic disorders or affective disorders with psychosis [278]. In the Suffolk County study of first-admission psychosis, only 3 of the 11 patients who met the diagnostic criteria for brief psychotic disorder at six months maintained the diagnosis at two-year follow-up [279]. A study based on registry data from Denmark identified evidence of excess mortality both from natural causes and suicide in patients initially recorded as having acute and transient psychotic disorder [280].
Consequences	**Individual:** High risk of injury, psychological distress, and impaired self-care during acute episodes. **Crew:** Exposure to unpredictable behaviour, conflict, or aggression; disruption of team functioning**.** **Ship:** Immediate risk to operational safety if onset occurs during critical tasks; potential need for diversion or emergency medical response. Necessity to remove the individual from duty, potentially requiring diversion or emergency medical intervention.
Unmitigated risk	Usually unacceptable. **Acute episode at sea:** Very high risk due to sudden onset, unpredictability, and potential severity of symptoms. **Between episodes:** Risk may be low if remission is complete, but recurrence remains possible.

[270] Mojtabai R et al. Brief psychotic disorder. UpToDate – last updated Sep 03, 2025, literature revies current through Oct 2025. Accessed 2025-12-01.
[271] Nkire N, Scully PJ, Browne DJ, et al. Systematic epidemiological and clinical comparisons across all 12 DSM-IV psychotic diagnoses in the Cavan-Monaghan First Episode Psychosis Study (CAMFEPS). Psychol Med 2021; 51:607.
[272] Singh SP, Burns T, Amin S, et al. Acute and transient psychotic disorders: precursors, epidemiology, course and outcome. Br J Psychiatry 2004; 185:452.
[273] Schwartz JE, Fennig S, Tanenberg-Karant M, et al. Congruence of diagnoses 2 years after a first-admission diagnosis of psychosis. Arch Gen Psychiatry 2000; 57:593.
[274] Eaton S, Harrap B, Downey L, et al. Incidence of treated first episode psychosis from an Australian early intervention service and its association with neighbourhood characteristics. Schizophr Res 2019; 209:206.
[275] Kingston T, Scully PJ, Browne DJ, et al. Diagnostic trajectory, interplay and convergence/divergence across all 12 DSM-IV psychotic diagnoses: 6-year follow-up of the Cavan-Monaghan First Episode Psychosis Study (CAMFEPS). Psychol Med 2013; 43:2523.
[276] Fusar-Poli P, Salazar de Pablo G, Rajkumar RP, et al. Diagnosis, prognosis, and treatment of brief psychotic episodes: a review and research agenda. Lancet Psychiatry 2022; 9:72.
[277] American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 5th ed, Text Revision (DSM-5-TR), American Psychiatric Association, 2022.
[278] Fusar-Poli P, Salazar de Pablo G, Rajkumar RP, et al. Diagnosis, prognosis, and treatment of brief psychotic episodes: a review and research agenda. Lancet Psychiatry 2022; 9:72.
[279] Schwartz JE, Fennig S, Tanenberg-Karant M, et al. Congruence of diagnoses 2 years after a first-admission diagnosis of psychosis. Arch Gen Psychiatry 2000; 57:593.
[280] Castagnini A, Foldager L, Bertelsen A. Excess mortality of acute and transient psychotic disorders: comparison with bipolar affective disorder and schizophrenia. Acta Psychiatr Scand 2013; 128:370.

	Determinants: Stress exposure, prior episodes, treatment adherence, and role safety-criticality.
Mitigation	**Fitness-for-duty assessments:** Confirm remission, evaluate likelihood of recurrence, and assess stress tolerance before deployment. **Medical follow-up:** Ensure access to psychiatric consultation and continuity of any prescribed treatment. **Role allocation:** Avoid safety-critical duties for individuals with recent episodes until stability is confirmed. **Stress management:** Structured routines, adequate rest, and supportive environment to reduce relapse risk. **Emergency protocols:** Pre-agreed steps for acute onset, including immediate removal from duty, safe observation, and medical contact. **Crew awareness:** Training to recognise sudden behavioural changes and respond appropriately.
Mitigated risk	• Full remission, no recurrence, adequate stress tolerance: Low residual risk, though monitoring remains essential. • Recent episode, incomplete remission, or high stress exposure: Moderate to high residual risk; restrict safety-critical duties. • **Acute onset at sea:** High residual risk; immediate removal from duty and activation of emergency protocols**.**
Recommendation	•**Case-by-case clearance:** Require recent fitness-for-duty assessment confirming remission and stress tolerance. Specialist advice. • **Role tailoring:** Assign duties compatible with current stability; restrict safety-critical roles if recurrence risk is significant. • **Operational safeguards:** Embed monitoring, supervision, and clear escalation protocols into ship safety management systems. • **Ongoing review:** Periodic reassessment and prompt evaluation after any incident, symptom change, or treatment adjustment.

22.6.3.6 F24 - INDUCED DELUSIONAL DISORDER ("FOLIE À DEUX") – SHARED PSYCHOTIC DISORDER

Reviewed 2025-12-02

Significance	Defined by the **adoption of delusional ideas** by a person in close association with someone who already has a psychotic disorder. The secondary individual usually lacks a prior psychotic history and may otherwise appear psychologically intact. The condition is sustained by proximity, emotional dependence, or social isolation. **DSM-5 correspondence:** Shared Psychotic Disorder is no longer a separate category but is subsumed under Other Specified Schizophrenia Spectrum and Other Psychotic Disorder.
Possible medical incident(s)	**Sudden behavioural change:** Adoption of bizarre or unsafe beliefs during duty. **Impaired judgment:** Acting on delusional instructions or misinterpreting operational risks. **Disorientation or confusion:** Loss of situational awareness due to shared false perceptions. **Aggression or agitation:** Conflict with crew members who challenge the delusional belief. **Operational disruption:** Collective refusal to follow procedures or insistence on unsafe actions.

General likelihood	SPD occurs in premorbidly disposed individuals in the context of social isolation which is shared with a psychotic person. Males and females are affected with equal frequency. There is equal prevalence in younger and older patients. The majority of shared psychoses (90.2%) are equally distributed among married couples, siblings, and parent-child dyads. Comorbid dementia, depression, and mental retardation and hallucinations are common. The majority of dyads (67.3%) are socially isolated. Risk factors include social isolation, dependency, and prolonged exposure to a psychotic partner. Separation often leads to remission in the secondary case, but recurrence is possible if re-exposed. [281]
Consequences	**Individual:** Psychological distress, impaired autonomy, and risk of developing independent psychosis. **Crew:** Exposure to unsafe collective behaviour, conflict, or coercion. **Ship:** Potential compromise of navigation, safety protocols, or emergency response if delusional beliefs dominate decision-making.
Unmitigated risk	Usually unacceptable. **At sea:** Unacceptable risk if shared delusions influence operational tasks. **Between episodes:** Risk may be low if separation and remission are achieved, but recurrence remains possible. **Determinants:** Relationship dynamics, isolation, stress exposure, and prior psychiatric history.
Mitigation	**Fitness-for-duty assessments**: Evaluate both individuals in the dyad; confirm remission in the secondary case. **Medical follow-up:** Psychiatric consultation and monitoring for independent psychosis. **Role allocation:** Avoid pairing individuals with known psychotic disorders in isolated or safety-critical roles. **Crew structure:** Encourage diverse team interactions to reduce dependency and isolate delusional influence. **Emergency protocols:** Immediate separation of affected individuals; safe observation and medical contact. **Crew awareness:** Training to recognise signs of shared delusional thinking and escalate concerns.
Mitigated risk	**Full remission after separation:** Low residual risk, though monitoring is essential. **Persistent delusional influence:** Moderate to high residual risk; restrict safety-critical duties. **Acute onset at sea:** High residual risk; immediate removal from duty and activation of emergency protocols.
Recommendation	**Case-by-case clearance:** Require psychiatric evaluation confirming remission and independence of judgment. **Role tailoring:** Assign duties that minimise risk of dependency or isolation.

[281] José MS et al. Shared Psychotic Disorder: A Critical Review of the Literature. Can J Psychiatry. 1995;20(7), https://doi.org/10.1177/070674379504000705

	Operational safeguards: Embed monitoring, supervision, and escalation protocols into safety management systems. **Ongoing review:** Periodic reassessment, especially after changes in crew composition or stress exposure.

22.6.3.7 F25 - SCHIZOAFFECTIVE DISORDERS

Reviewed 2025-12-02

Significance	Schizoaffective disorder combines features of both schizophrenia and mood disorders (depressive or manic episodes). Its dual nature makes it particularly relevant in safety-critical environments, as psychotic symptoms (delusions, hallucinations, disorganisation) may coexist with severe mood disturbances, amplifying unpredictability and impairing judgment. Psychotic symptoms undermine perception, judgment, and situational awareness. Mood symptoms (mania or depression) further destabilise performance, leading to impulsivity, agitation, or withdrawal. In maritime settings, this dual impact increases risk of unsafe behaviour, poor decision-making, and disruption of crew cohesion.
Possible medical incident(s)	**Sudden behavioural change:** Delusions, hallucinations, or disorganised behaviour during duty. **Impaired judgment:** Unsafe handling of equipment, misinterpretation of instructions. **Manic features:** Impulsivity, aggression, overconfidence, risk-taking. **Depressive features:** Withdrawal, slowed responses, impaired concentration, suicidal ideation. **Operational disruption:** Loss of situational awareness, conflict with crew, unsafe navigation or technical handling.
General likelihood	Typically chronic, with recurrent episodes and variable inter-episode functioning [282]. Prognosis is intermediate between schizophrenia and mood disorders: better than schizophrenia alone, but worse than pure affective disorders. Relapse risk is significant, especially under stress or with poor treatment adherence [283]. Functional impairment may persist even in remission [284].
Consequences	**Individual:** High risk of injury, psychological distress, impaired self-care, suicide risk. **Crew:** Exposure to unpredictable behaviour, aggression, or withdrawal; disruption of team functioning.

[282] Pinna F, Sanna L, Perra V, Pisu Randaccio R, Diana E, Carpiniello B; Cagliari Recovery Study Group. Long-term outcome of schizoaffective disorder. Are there any differences with respect to schizophrenia? Riv Psichiatr. 2014 Jan-Feb;49(1):41-9. doi: 10.1708/1407.15624. PMID: 24572583.

[283] Rivelli A, Fitzpatrick V, Nelson M, Laubmeier K, Zeni C, Mylavarapu S. Real-world predictors of relapse in patients with schizophrenia and schizoaffective disorder in a large health system. Schizophrenia (Heidelb). 2024 Feb 29;10(1):28. doi: 10.1038/s41537-024-00448-2. PMID: 38424086; PMCID: PMC10904733.

[284] Studentkowski G, Scheele D, Calabrese P, Balkau F, Höffler J, Aubel T, Edel MA, Juckel G, Assion HJ. Cognitive impairment in patients with a schizoaffective disorder: a comparison with bipolar patients in euthymia. Eur J Med Res. 2010 Feb 26;15(2):70-8. doi: 10.1186/2047-783x-15-2-70. PMID: 20452887; PMCID: PMC3352048.

	Ship: Immediate risk to operational safety if onset occurs during critical tasks; potential need for diversion or emergency medical response.
Unmitigated risk	Unacceptable **At sea:** Unacceptable risk due to chronicity, relapse potential, and dual symptom burden. **Between episodes:** Residual risk remains, even if remission is achieved, due to recurrence likelihood. **Determinants:** Treatment adherence, stress exposure, prior episodes, and role safety-criticality.
Mitigation	**Fitness-for-duty assessments:** Confirm stability, evaluate recurrence risk, and assess stress tolerance before deployment. **Medical follow-up:** Ensure psychiatric consultation, treatment adherence, and continuity of care. **Role allocation:** Avoid safety-critical duties unless stability is well-established and monitored. **Stress management:** Structured routines, adequate rest, supportive environment to reduce relapse risk. **Emergency protocols:** Pre-agreed steps for acute onset, including immediate removal from duty, safe observation, and medical contact. **Crew awareness:** Training to recognise behavioural changes and respond appropriately.
Mitigated risk	Unacceptable in almost all cases. Service at sea only after consideration by the appellate body. Stable remission, good adherence, adequate stress tolerance: Moderate residual risk; monitoring essential. **Recent episode, incomplete remission, or poor adherence:** High residual risk; cannot work with safety-critical duties. **Acute onset at sea**: Very high residual risk; immediate removal from duty and activation of emergency protocols.

22.6.3.8 F30 - MANIC EPISODE

Reviewed 2025-12-02

Significance	Mania represents a severe disturbance of mood characterised by elevated, expansive, or irritable affect, often accompanied by psychotic features. In safety-critical maritime environments, the impulsivity, disinhibition, and impaired judgment associated with mania pose substantial risks to both the individual and the crew. **ICD-10 F30:** Manic episode (subtypes: without psychotic symptoms, with psychotic symptoms). **Core features:** persistently elevated or irritable mood, increased energy, decreased need for sleep, pressured speech, flight of ideas, distractibility, inflated self-esteem or grandiosity. **Severe cases** may include psychotic symptoms (delusions, hallucinations). **DSM-5 correspondence:** Manic Episode (criterion for Bipolar I Disorder).
Possible medical incident(s)	**Sudden behavioural change:** Excessive talkativeness, distractibility, or disorganised activity during duty. **Impaired judgment:** Risk-taking behaviour, unsafe manoeuvres, or misinterpretation of operational risks. **Aggression or agitation**: Conflict with crew, refusal to comply with safety instructions.

	Psychotic features: Delusions of grandeur or persecution, leading to unsafe actions. **Physical exhaustion:** Collapse or medical emergency due to prolonged hyperactivity and sleep deprivation.
General likelihood	Episodes typically last at least one week (or any duration if hospitalisation is required). Course is often recurrent, especially within the context of Bipolar I Disorder. Remission is possible with treatment, but relapse risk is high - most individuals experience recurrent episodes [285]. Untreated episodes may escalate rapidly, leading to exhaustion, psychosis, or dangerous behaviour. Mortality risk is elevated, particularly due to suicide and accidental injury [286]. Functional impairment is significant, even between episodes, due to residual symptoms or cognitive deficits
Consequences	**Individual:** High risk of injury, exhaustion, psychological distress, and suicide. **Crew:** Exposure to unpredictable, aggressive, or reckless behaviour; disruption of team functioning. **Ship:** Immediate risk to operational safety if onset occurs during critical tasks; potential need for diversion or emergency medical response.
Unmitigated risk	Unacceptable. **At sea:** Unacceptable risk due to severity, unpredictability, and potential psychotic features. **Between episodes:** Residual risk remains, especially if treatment adherence is poor or stress exposure is high. **Determinants:** Prior episodes, treatment adherence, stress tolerance, and role safety-criticality.
Mitigation	**Fitness-for-duty assessments:** Confirm remission, evaluate recurrence risk, and assess stress tolerance before deployment. **Medical follow-up:** Ensure psychiatric consultation, treatment adherence, and continuity of care. **Role allocation:** Avoid safety-critical duties unless stability is well-established and monitored. **Stress management:** Structured routines, adequate rest, supportive environment to reduce relapse risk. **Emergency protocols:** Immediate removal from duty, safe observation, and medical contact in case of acute onset. **Crew awareness:** Training to recognise early signs of mania (e.g., reduced sleep, pressured speech, irritability).
Mitigated risk	Frequently unacceptable, even following the implementation of mitigating measures. Stable remission, good adherence, adequate stress tolerance: Moderate residual risk; monitoring essential. Recent episode, incomplete remission, or poor adherence: High residual risk; restrict safety-critical duties.

[285] Kessing LV, Andersen PK, Vinberg M. Risk of recurrence after a single manic or mixed episode - a systematic review and meta-analysis. Bipolar Disord 2018; 20:9–17. https://doi.org/10.1111/bdi.12593
[286] Christine M. Ramsey, Adam P. Spira, Ramin Mojtabai, William W. Eaton, Kimberly Roth, Hochang Benjamin Lee, Lifetime manic spectrum episodes and all-cause mortality: 26-year follow-up of the NIMH epidemiologic catchment area study, Journal of Affective Disorders, 2013; 151(1):337-342. https://doi.org/10.1016/j.jad.2013.06.019

	Acute onset at sea: Very high residual risk; immediate removal from duty and activation of emergency protocols.

22.6.3.9 F31 - BIPOLAR AFFECTIVE DISORDER

Reviewed 2025-12-02

Significance	Bipolar affective disorder is a major psychiatric condition characterised by recurrent episodes of mania/hypomania and depression, often with intervening periods of remission. Its cyclical nature and potential severity make it highly relevant in safety-critical maritime environments, where stability, vigilance, and reliable functioning are essential. ICD-10 F31: Bipolar affective disorder, encompassing manic, depressive, mixed, and remitted states. Defined by recurrent episodes of abnormal mood: Manic/hypomanic episodes: elevated or irritable mood, increased activity, impulsivity, possible psychosis. Depressive episodes: low mood, reduced energy, impaired concentration, suicidal ideation. Mixed episodes: simultaneous features of mania and depression, often highly destabilising. DSM-5 correspondence: Bipolar I Disorder (mania ± depression) and Bipolar II Disorder (hypomania + depression).
Possible medical incident(s)	**Sudden behavioural change:** Onset of mania, depression, or mixed symptoms during duty. **Impaired judgment:** Unsafe manoeuvres, misinterpretation of instructions, or neglect of responsibilities. **Aggression or agitation:** Conflict with crew, refusal to comply with safety protocols. **Withdrawal or slowed responses:** Loss of situational awareness, delayed reaction in emergencies. **Suicidal behaviour:** Risk to self and disruption of ship operations.
General likelihood	Bipolar affective disorder is typically recurrent and lifelong, characterised by alternating episodes with variable remission. The risk of relapse is high, particularly under conditions of stress or poor adherence to treatment. One study of 172 patients with Bipolar I disorder reported an 85 per cent relapse rate over five years [287]. Another study demonstrated that patients with Bipolar II disorder experienced a relapse frequency of 60 per cent within four years [288]. Furthermore, it has been shown that up to 73 per cent of patients with bipolar disorder who adhere to prescribed medication will nevertheless relapse within five years [289]. Each successive episode appears to lower the threshold for the precipitation of further episodes [290]. Bipolar II disorder has a greater tendency towards chronicity than Bipolar I [291]. In a substantial proportion of patients with bipolar disorder, residual

[287] Keller MB, Lavori PW, Coryell W, et al. Bipolar I: a five-year prospective follow-up. J Nerv Ment Dis 1993; 181:238
[288] McAllister-Williams, R. Hamish (January 1, 2006). "Relapse prevention in bipolar disorder: a critical review of current guidelines". Journal of Psychopharmacology 20 (2): 12-16
[289] Gitlin MJ, Swendsen J, Heller TL. et al. Relapse and impairment in bipolar disorder. Am J Psychiatry 1995; 152: 1635-40
[290] Post RM. Transduction of psychosocial stress into the neurobiology of recurrent affective disorder. Am J Psychiatry 1992; 149: 999-1010
[291] Randall, Carol (2010). "1". Neuropsychological emotion processing abnormalities in bipolar disorder I and II (Ph. D thesis). University of Nevada. Retrieved 19 October 2011

	sub-syndromal symptoms persist between major syndromal episodes. Long-term studies have indicated that many patients remain symptomatic for approximately 50 per cent of the time during follow-up periods exceeding ten years [292]. Functional impairment may continue between episodes as a result of residual symptoms or cognitive deficits. Evidence shows that two years after the first episode, only 36 per cent of patients had regained their pre-morbid level of functioning, while 40 per cent had experienced further episodes during that period (20 per cent manic and 20 per cent depressive) [293]. Prognosis varies: some individuals achieve long-term stability with treatment, others experience frequent relapses.
Consequences	**Individual:** High risk of injury, exhaustion, psychological distress, and suicide. **Crew:** Exposure to unpredictable, aggressive, or withdrawn behaviour; disruption of team functioning. **Ship:** Immediate risk to operational safety if onset occurs during critical tasks; potential need for diversion or emergency medical response.
Unmitigated risk	Always unacceptable. **At sea:** Unacceptable risk due to chronicity, relapse potential, and severity of episodes. **Between episodes:** Residual risk remains, even if remission is achieved, due to recurrence likelihood. **Determinants:** Prior episodes, treatment adherence, stress tolerance, and role safety-criticality.
Mitigation	**Fitness-for-duty assessments:** Confirm stability, evaluate recurrence risk, and assess stress tolerance before deployment. **Medical follow-up:** Ensure psychiatric consultation, treatment adherence, and continuity of care. **Role allocation:** Avoid safety-critical duties unless stability is well-established and monitored. **Stress management:** Structured routines, adequate rest, supportive environment to reduce relapse risk. **Emergency protocols:** Immediate removal from duty, safe observation, and medical contact in case of acute onset. **Crew awareness:** Training to recognise early signs of mania, depression, or mixed states.
Mitigated risk	Frequently unacceptable, even following the implementation of mitigating measures. Stable remission, good adherence, adequate stress tolerance: Moderate residual risk; monitoring essential. Recent episode, incomplete remission, or poor adherence: High residual risk; restrict safety-critical duties. **Acute onset at sea:** Very high residual risk; immediate removal from duty and activation of emergency protocols.

[292] Fagiolini A1, Forgione R, Maccari M, Cuomo A, Morana B, Dell'Osso MC, Pellegrini F, Rossi A. Prevalence, chronicity, burden and borders of bipolar disorder. J Affect Disord. 2013 Jun;148(2-3):161-9. doi: 10.1016/j.jad.2013.02.001. Epub 2013 Mar 7.
[293] Tohen M, Hennen J, Zarate C, et al. Harvard first episodes project: predictors of recovery and relapse. Bipolar Disord 2002;4(suppl 1):135-136

22.6.4 AFFECTIVE DISORDERS

Please note that bipolar disease (F31.0-F31.9) is not assessed according to the section 'Mood/affective disorders' F32-38, rather according to the section of 'Psychosis' (F20-31), see 17.6.3.3 Bipolar disease above.

F 32-43	Mood/affective disorders Severe anxiety state, depression, or any other mental disorder likely to impair performance Recurrence, reduced performance, especially in emergencies	T – While acute, under investigation or if impairing symptoms or side effects of medication present. At least three months on stable medication P – Persistent or recurrent impairing symptoms	R, L - Restrict to near-coastal waters; not to work as master in charge of ship; only when person: - has good functional recovery; - has insight; - is fully compliant with treatment and the advice given; - has no adverse effects; and - has a low likelihood of recurrence	Case-by-case assessment to exclude likelihood of recurrence after at least two years with no further episodes and with no medication or on medication with no impairing adverse effects
	Mood/affective disorders Minor or reactive symptoms of anxiety/depression Recurrence, reduced performance, especially in emergencies	T – Until symptom free. If person is on medication, the medication must be on a stable dose and free from impairing adverse effects P – Persistent or recurrent impairing symptoms	R, L – Time limited and consider geographical restriction if on stable dose of medication and free from impairing symptoms or impairing side effects from medication	Case-by-case assessment after one year from end of episode if symptom free and off medication or on medication with no impairing effects

Note:
Not all diagnostic entities are covered in the text below. Medical conditions not explicitly mentioned in the attachment shall be assessed analogously and directly against Article 1 of the Regulations. This means that:

- **"Persistent depressive disorder (dysthymia) and cyclothymia** shall be assessed analogously to depressive and anxiety disorders, respectively, according to severity, functional impairment, and recurrence."
- **"Stress-related disorders (acute stress reaction, PTSD, adjustment disorder)** shall be assessed under the same operational criteria for recurrence, impairment, and medication side-effects."
- **"Mixed anxiety-depressive disorder** shall follow the minor/reactive vs. severe pathways, based on functional impact."

22.6.4.1 F32.0-5, F32.9 - MAJOR DEPRESSIVE DISORDER

Reviewed 2025-12-02

Significance	Crew members suffering from major depressive disorder frequently experience fatigue and loss of energy, diminished focus on their duties, impaired memory and concentration, restlessness and irritability, difficulty in decision-making, and increased accident proneness. They may also suffer from feelings of guilt, hopelessness, or worthlessness, sometimes accompanied by suicidal ideation.
Possible medical incident(s)	**Relapse of depressive episode:** Sudden re-emergence of low mood, loss of energy, impaired concentration, or hopelessness during duty. **Suicidal ideation or behaviour:** Risk to self, requiring urgent intervention and potential disruption of ship operations. **Impaired judgment and decision-making:** Difficulty interpreting instructions, slowed responses, or unsafe handling of equipment. **Cognitive impairment:** Reduced memory, concentration, and situational awareness, leading to errors in navigation or technical tasks. **Agitation or irritability:** Conflict with crew members, poor teamwork, or escalation of interpersonal tensions. **Diagnostic shift:** Emergence of manic or psychotic symptoms suggesting conversion to bipolar disorder or another psychotic illness. **Comorbidity impact:** Worsening of concomitant medical conditions (e.g., cardiovascular disease, diabetes, stroke) due to depressive relapse. **Medication side-effects:** Sedation, impaired alertness, or other adverse effects compromising operational safety.
General likelihood	The course of illness in major depressive disorder is heterogeneous, encompassing a range of conditions that differ in pathogenesis, clinical presentation, and treatment response [294] [295] [296]. A first episode of major depression may, in some cases, represent the initial manifestation of bipolar disorder. A meta-analysis of 3000 patients with major depressive disorder (five studies, 12–18 years follow-up) found that 23 per cent were subsequently diagnosed with bipolar disorder [297]. The probability of diagnostic conversion was greatest within the first five years and was more likely in patients with younger age at onset, a family history of bipolar disorder, psychotic features, or subthreshold manic symptoms during depressive episodes. In most cases, complete remission occurs within three to four months, either spontaneously (particularly in mild cases) or with treatment. One observational study of 92 patients over 23 years found an average symptom duration of 12 weeks [298]. Other studies have reported averages of 16 weeks [299], and 20 weeks

[294] Gilbody S, Lightfoot T, Sheldon T. Is low folate a risk factor for depression? A meta-analysis and exploration of heterogeneity. J Epidemiol Community Health 2007; 61:631.
[295] Chen L, Eaton WW, Gallo JJ, Nestadt G. Understanding the heterogeneity of depression through the triad of symptoms, course and risk factors: a longitudinal, population-based study. J Affect Disord 2000; 59:1.
[296] Jabben N, Penninx BW, Beekman AT, et al. Co-occurring manic symptomatology as a dimension which may help explaining heterogeneity of depression. J Affect Disord 2011; 131:224.
[297] Ratheesh A, Davey C, Hetrick S, et al. A systematic review and meta-analysis of prospective transition from major depression to bipolar disorder. Acta Psychiatr Scand 2017; 135:273.

[300]. For individuals with multiple episodes, the duration of each episode was difficult to predict.
Depression increases the risk of developing coronary disease, diabetes, and stroke, and worsens the prognosis of concomitant medical conditions [301].
The risk of suicide is approximately 63 per cent higher than in the general population [302]. While comparison of suicide prevalence rates in the whole population across various countries is difficult due to differences in nature, quality, and availability of reporting, as well as collection and analysis of data related to suicide, the WHO provides some comparative international data. Male suicide rates are highest in post-communist countries such as Lithuania (68.1/100,000), Belarus (63.3/100,000), and Russia (58.1/100,000), whereas female suicide rates are highest in Asian countries such as China (14.8/100,000), Korea (14.1/100,000), and Japan (13.1/100,000) [303].

Major depression is highly recurrent. Following recovery from a single episode, the estimated recurrence rate over two years exceeds 40 per cent; after two episodes, the risk of recurrence within five years is approximately 75 per cent [304].

A Dutch population study reported cumulative recurrence rates of 13 per cent at five years, 23 per cent at ten years, and 42 per cent at twenty years. The risk of recurrence is greatest in the first few months after recovery [305].

One study of 318 patients recovering from a single episode demonstrated that 64 per cent experienced at least one subsequent episode during ten years of follow-up [306].

Months after first episode	Recurrence (%)
1-6	20
7-12	18
13-18	15
19-24	13
25-30	11
31-36	9

Recurrence rate after single episode of major depression

After Solomon DA et al. Am J Psychiatry 2000; 157:229

Clinical factors associated with recurrence include:

[304] Solomon DA, Keller MB, Leon AC, et al. Multiple recurrences of major depressive disorder. Am J Psychiatry 2000; 157:229.
[305] Hardeveld F, Spijker J, De Graaf R, et al. Recurrence of major depressive disorder and its predictors in the general population: results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Psychol Med 2013; 43:39.
[306] Solomon DA, Keller MB, Leon AC, et al. Multiple recurrences of major depressive disorder. Am J Psychiatry 2000; 157:229.

	Prior history of recurrence: Each recurrence increased the risk of a subsequent episode by 16 per cent (Solomon et al.) [307] [308] [309] [310] [311] [312] [313] [314] [315] [316] [317] [318] [319] **Residual depressive symptoms:** A prospective study of 322 patients found median time to recurrence was 32 weeks for those with one or two mild residual symptoms, compared with 135 weeks for those with no residual symptoms.[320] [321] [322] [323] [324] [325] [326] [327] [328] [329] [330]. **Childhood maltreatment:** Recurrence is twice as likely among individuals exposed to abuse, neglect, family conflict, or violence[331] [332] Greater severity of episode [333] [334] [335] [336] [337]

[307] Grilo CM, Stout RL, Markowitz JC, et al. Personality disorders predict relapse after remission from an episode of major depressive disorder: a 6-year prospective study. J Clin Psychiatry 2010; 71:1629.
[308] Hardeveld F, Spijker J, De Graaf R, et al. Recurrence of major depressive disorder and its predictors in the general population: results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Psychol Med 2013; 43:39.
[309] Solomon DA, Keller MB, Leon AC, et al. Multiple recurrences of major depressive disorder. Am J Psychiatry 2000; 157:229.
[310] Keller MB, Lavori PW, Lewis CE, Klerman GL. Predictors of relapse in major depressive disorder. JAMA 1983; 250:3299.
[311] Pintor L, Torres X, Navarro V, et al. Is the type of remission after a major depressive episode an important risk factor to relapses in a 4-year follow up? J Affect Disord 2004; 82:291.
[312] Giles DE, Jarrett RB, Biggs MM, et al. Clinical predictors of recurrence in depression. Am J Psychiatry 1989; 146:764.
[313] Kessing LV. Severity of depressive episodes according to ICD-10: prediction of risk of relapse and suicide. Br J Psychiatry 2004; 184:153.
[314] Maj M, Veltro F, Pirozzi R, et al. Pattern of recurrence of illness after recovery from an episode of major depression: a prospective study. Am J Psychiatry 1992; 149:795.
[315] Mueller TI, Leon AC, Keller MB, et al. Recurrence after recovery from major depressive disorder during 15 years of observational follow-up. Am J Psychiatry 1999; 156:1000.
[316] ten Doesschate MC, Bockting CL, Koeter MW, et al. Prediction of recurrence in recurrent depression: a 5.5-year prospective study. J Clin Psychiatry 2010; 71:984.
[317] Karsten J, Hartman CA, Smit JH, et al. Psychiatric history and subthreshold symptoms as predictors of the occurrence of depressive or anxiety disorder within 2 years. Br J Psychiatry 2011; 198:206.
[318] Colman I, Naicker K, Zeng Y, et al. Predictors of long-term prognosis of depression. CMAJ 2011; 183:1969.
[319] van Loo HM, Aggen SH, Gardner CO, Kendler KS. Multiple risk factors predict recurrence of major depressive disorder in women. J Affect Disord 2015; 180:52.
[320] Pintor L, Torres X, Navarro V, et al. Is the type of remission after a major depressive episode an important risk factor to relapses in a 4-year follow up? J Affect Disord 2004; 82:291.
[321] Maj M, Veltro F, Pirozzi R, et al. Pattern of recurrence of illness after recovery from an episode of major depression: a prospective study. Am J Psychiatry 1992; 149:795.
[322] ten Doesschate MC, Bockting CL, Koeter MW, et al. Prediction of recurrence in recurrent depression: a 5.5-year prospective study. J Clin Psychiatry 2010; 71:984.
[323] Karsten J, Hartman CA, Smit JH, et al. Psychiatric history and subthreshold symptoms as predictors of the occurrence of depressive or anxiety disorder within 2 years. Br J Psychiatry 2011; 198:206.
[324] van Loo HM, Aggen SH, Gardner CO, Kendler KS. Multiple risk factors predict recurrence of major depressive disorder in women. J Affect Disord 2015; 180:52.
[325] Nierenberg AA, Husain MM, Trivedi MH, et al. Residual symptoms after remission of major depressive disorder with citalopram and risk of relapse: a STAR*D report. Psychol Med 2010; 40:41.
[326] Judd LL, Paulus MJ, Schettler PJ, et al. Does incomplete recovery from first lifetime major depressive episode herald a chronic course of illness? Am J Psychiatry 2000; 157:1501.
[327] Kiosses DN, Alexopoulos GS. The prognostic significance of subsyndromal symptoms emerging after remission of late-life depression. Psychol Med 2013; 43:341.
[328] de Zwart PL, Jeronimus BF, de Jonge P. Empirical evidence for definitions of episode, remission, recovery, relapse and recurrence in depression: a systematic review. Epidemiol Psychiatr Sci 2019; 28:544.
[329] Eaton WW, Anthony JC, Gallo J, et al. Natural history of Diagnostic Interview Schedule/DSM-IV major depression. The Baltimore Epidemiologic Catchment Area follow-up. Arch Gen Psychiatry 1997; 54:993.
[330] Zisook S, Lesser I, Stewart JW, et al. Effect of age at onset on the course of major depressive disorder. Am J Psychiatry 2007; 164:1539.
[331] Nanni V, Uher R, Danese A. Childhood maltreatment predicts unfavorable course of illness and treatment outcome in depression: a meta-analysis. Am J Psychiatry 2012; 169:141.
[332] Hardeveld F, Spijker J, De Graaf R, et al. Recurrence of major depressive disorder and its predictors in the general population: results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Psychol Med 2013; 43:39.
[333] Bukh JD, Andersen PK, Kessing LV. Rates and predictors of remission, recurrence and conversion to bipolar disorder after the first lifetime episode of depression--a prospective 5-year follow-up study. Psychol Med 2016; 46:1151.
[334] Holma KM, Holma IA, Melartin TK, et al. Long-term outcome of major depressive disorder in psychiatric patients is variable. J Clin Psychiatry 2008; 69:196.
[335] Hardeveld F, Spijker J, De Graaf R, et al. Recurrence of major depressive disorder and its predictors in the general population: results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Psychol Med 2013; 43:39.
[336] Pintor L, Torres X, Navarro V, et al. Is the type of remission after a major depressive episode an important risk factor to relapses in a 4-year follow up? J Affect Disord 2004; 82:291.
[337] Coryell W, Endicott J, Keller MB. Predictors of relapse into major depressive disorder in a nonclinical population. Am J Psychiatry 1991; 148:1353.

	Younger age at assessment or onset [338] [339] [340] [341] [342] [343] Comorbid personality disorder [344] [345] [346] Poorer psychosocial functioning [347] [348] Low mastery and [349] Emotional dysregulation and repeated exposure to adversity[350] [351] **Treatment resistance**. Relapse rates were 34 per cent if remission occurred on initial treatment, 47 per cent after step 2, 43 per cent after step 3, and 50 per cent after step 4 in pharmacotherapy. [352] [353]
Consequences	**Individual:** Ranging from minor impairment to severe disability or suicide risk. **Crew:** Ranging from minor disruption to serious compromise of team functioning and safety. **Ship:** Ranging from minor operational impact to serious safety risks requiring diversion or emergency intervention.
Unmitigated risk	**At sea:** Unacceptable risk due to high relapse potential, unpredictability of onset, and possible severity of symptoms. **Individual:** Elevated risk of suicide, impaired self-care, and medical deterioration. Crew: Exposure to unpredictable behaviour, reduced teamwork, and potential conflict. **Ship operations:** Immediate compromise of safety if onset occurs during critical tasks; diversion or emergency medical response may be required.
Mitigation	**Fitness-for-duty assessments:** Specialist psychiatric evaluation to confirm remission, assess recurrence risk, and review treatment adherence. **Medical follow-up:** Ongoing psychiatric care, monitoring of medication, and continuity of treatment. **Role allocation:** Restrict safety-critical duties unless stability and low recurrence risk are clearly demonstrated. **Stress management:** Structured routines, adequate rest, and supportive environment to reduce relapse risk.

[338] Hardeveld F, Spijker J, De Graaf R, et al. Recurrence of major depressive disorder and its predictors in the general population: results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Psychol Med 2013; 43:39.
[339] Pintor L, Torres X, Navarro V, et al. Is the type of remission after a major depressive episode an important risk factor to relapses in a 4-year follow up? J Affect Disord 2004; 82:291.
[340] Coryell W, Endicott J, Keller MB. Predictors of relapse into major depressive disorder in a nonclinical population. Am J Psychiatry 1991; 148:1353.
[341] Eaton WW, Anthony JC, Gallo J, et al. Natural history of Diagnostic Interview Schedule/DSM-IV major depression. The Baltimore Epidemiologic Catchment Area follow-up. Arch Gen Psychiatry 1997; 54:993.
[342] Giles DE, Jarrett RB, Biggs MM, et al. Clinical predictors of recurrence in depression. Am J Psychiatry 1989; 146:764.
[343] Zisook S, Lesser I, Stewart JW, et al. Effect of age at onset on the course of major depressive disorder. Am J Psychiatry 2007; 164:1539.
[344] Grilo CM, Stout RL, Markowitz JC, et al. Personality disorders predict relapse after remission from an episode of major depressive disorder: a 6-year prospective study. J Clin Psychiatry 2010; 71:1629.
[345] Bukh JD, Andersen PK, Kessing LV. Personality and the Long-Term Outcome of First-Episode Depression: A Prospective 5-Year Follow-Up Study. J Clin Psychiatry 2016; 77:e704.
[346] Wiegand HF, Godemann F. Increased Treatment Complexity for Major Depressive Disorder for Inpatients With Comorbid Personality Disorder. Psychiatr Serv 2017; 68:524.
[347] Stegenga BT, Geerlings MI, Torres-González F, et al. Risk factors for onset of multiple or long major depressive episodes versus single and short episodes. Soc Psychiatry Psychiatr Epidemiol 2013; 48:1067.
[348] Hardeveld F, Spijker J, De Graaf R, et al. Recurrence of major depressive disorder and its predictors in the general population: results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Psychol Med 2013; 43:39.
[349] Colman I, Naicker K, Zeng Y, et al. Predictors of long-term prognosis of depression. CMAJ 2011; 183:1969.
[350] van Loo HM, Aggen SH, Gardner CO, Kendler KS. Multiple risk factors predict recurrence of major depressive disorder in women. J Affect Disord 2015; 180:52.
[351] Abravanel BT, Sinha R. Emotion dysregulation mediates the relationship between lifetime cumulative adversity and depressive symptomatology. J Psychiatr Res 2015; 61:89.
[352] Fekadu A, Wooderson SC, Markopoulo K, et al. What happens to patients with treatment-resistant depression? A systematic review of medium to long term outcome studies. J Affect Disord 2009; 116:4.
[353] Rush AJ, Trivedi MH, Wisniewski SR, et al. Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: a STAR*D report. Am J Psychiatry 2006; 163:1905.

	Emergency protocols: Pre-agreed steps for acute onset, including immediate removal from duty, safe observation, and medical contact. **Crew awareness:** Training to recognise early signs of depressive relapse and respond appropriately.
Mitigated risk	Frequently unacceptable, even following the implementation of mitigating measures. Stable remission, good adherence, adequate stress tolerance: Moderate residual risk; monitoring remains essential. Recent episode, incomplete remission, or poor adherence: High residual risk; restrict safety-critical duties. **Acute onset at sea:** Very high residual risk; immediate removal from duty and activation of emergency protocols.

22.6.4.2 F41.0-8 - ANXIETY

Reviewed 025-12-03

Significance	Generalised anxiety disorder (GAD) is one of the most common mental disorders encountered in primary care. A European study reported a 12-month prevalence of between 1.7 and 3.4 per cent [354]. GAD can be conceptualised as an imbalance between threatening signals and safety signals. In healthy individuals, safety signals limit fear by defining situations or places where one can feel secure. In GAD, these safety signals are insufficient or ineffective, leading to persistent fear in circumstances where others would perceive no threat. Behavioural responses represent unsuccessful attempts to achieve a sense of safety, resulting in undue persistence of anxiety [355]. In maritime contexts, individuals with GAD may themselves become a safety risk, as inappropriate behaviour under demanding conditions can impair performance during both routine and emergency duties.
Possible medical incident(s)	**Excessive worry and impaired concentration**: Reduced situational awareness, errors in navigation or technical tasks. Autonomic hyperactivity and exaggerated startle response: Disruption of performance under stress. **Irritability, agitation, or restlessness:** Conflict with crew members, impaired teamwork. **Insomnia and fatigue:** Reduced resilience, slower reaction times, and cumulative performance deficits. **Functional impairment:** Comparable to major depression, with risk of unsafe behaviour in ordinary and emergency duties.[356] [357]
General likelihood	A link between major depression and other anxiety disorders has been observed in the majority of cases with GAD [358]. In a nationally representative survey of US adults, 66% of individuals with current GAD had at least one

[354] Wittchen HU, Jacobi F, Rehm J, et al. The size and burden of mental disorders and other disorders of the brain in Europe 2010. Eur Neuropsychopharmacol 2011; 21:655.
[355] Woody S, Rachmann S. Generalized anxiety disorder (GAD) as an unsuccessful search for safety. Clin Psychol Rev. 1994;14:8, 743-753.
U. Impairment in pure and comorbid generalized anxiety disorder and major depression at 12 months in two national surveys. Am J Psychiatry 1999; 156:1915.
eralized anxiety disorder and major depression in a national survey. Int Clin Psychopharmacol 2000; 15:319.
[358] Wittchen HU, Jacobi F, Rehm J, et al. The size and burden of mental disorders and other disorders of the brain in Europe 2010. Eur Neuropsychopharmacol 2011; 21:655.

	concurrent disorder [359]. Individual disorders found to co-occur in people with GAD (rates over the previous 30 days and lifetime) included [360] [361]: Social phobia – 23.2 and 34.4% Specific phobia – 24.5 and 35.1% Panic disorder – 22.6 and 23.5%. Associations are also observed with substance misuse, post-traumatic stress disorder, and obsessive-compulsive disorder. Comorbidity with major depression is particularly significant, leading to a more severe and prolonged course, greater functional impairment, and poorer prognosis. Longitudinal studies indicate a prolonged and fluctuating course. A prospective study of 179 patients with GAD (DSM-III-R) found that approximately 60 per cent recovered over 12 years, but around 50 per cent of those subsequently relapsed [362]. Recovery is less likely in patients with comorbid major depression, panic disorder, or agoraphobia [363]. Early onset is associated with a more protracted course and higher rates of comorbidity [364]. Late onset GAD often begins abruptly and is linked to identifiable stressors. The variation between individuals is considerable. Accordingly, the safety risk cannot be determined on the basis of general knowledge about others with the same diagnosis. Assessment shall therefore be conducted on an individual basis, with a personalised risk evaluation undertaken in each case.
Consequences	**Individual:** Ranging from minor impairment to serious disability. **Crew:** Ranging from minor disruption to significant compromise of cohesion and safety. **Ship operations:** Ranging from minor operational impact to serious safety risks in emergencies.
Unmitigated risk	**Unacceptable,** given the unpredictability of symptoms and their impact on vigilance, concentration, and teamwork.
Mitigation	**Fitness-for-duty assessments:** Specialist psychiatric evaluation to determine severity, comorbidity, and treatment response. **Medical follow-up:** Ongoing monitoring of symptoms and medication side-effects. **Role allocation:** Restrict safety-critical duties unless stability and adequate symptom control are demonstrated**.** **Stress management:** Structured routines, adequate rest, and supportive environment to reduce relapse risk. **Emergency protocols:** Pre-agreed steps for acute symptom escalation, including removal from duty and medical contact.

[359] Wittchen HU, Zhao S, Kessler RC, Eaton WW. DSM-III-R generalized anxiety disorder in the National Comorbidity Survey. Arch Gen Psychiatry 1994; 51:355.
[360] Wittchen HU, Zhao S, Kessler RC, Eaton WW. DSM-III-R generalized anxiety disorder in the National Comorbidity Survey. Arch Gen Psychiatry 1994; 51:355.
[361] Brawman-Mintzer O, Lydiard RB, Emmanuel N, et al. Psychiatric comorbidity in patients with generalized anxiety disorder. Am J Psychiatry 1993; 150:1216.
[362] Bruce SE, Yonkers KA, Otto MW, et al. Influence of psychiatric comorbidity on recovery and recurrence in generalized anxiety disorder, social phobia, and panic disorder: a 12-year prospective study. Am J Psychiatry 2005; 162:1179.
Am J Psychiatry 2005; 162:1179.
[364] Shores MM, Glubin T, Cowley DS, et al. The relationship between anxiety and depression: a clinical comparison of generalized anxiety disorder, dysthymic disorder, panic disorder, and major depressive disorder. Compr Psychiatry 1992; 33:237.

	Workplace reports: Feedback on performance in both routine and emergency situations to inform assessment.
Mitigated risk	**Individual**: Ranging from acceptable to unacceptable, depending on severity, comorbidity, and treatment response. **Crew:** Ranging from acceptable to unacceptable, depending on impact on teamwork and behaviour. **Ship:** Ranging from acceptable to unacceptable, depending on symptom control and resilience under stress.

22.6.4.3 F42.0 - OBSESSIVE COMPULSIVE DISORDER (OCD)

Reviewed 2025-12-03

Significance	Obsessive-Compulsive Disorder (OCD) is a condition that can pose a safety threat on board ship. Individuals may present with obsessive or compulsive symptoms across multiple domains, including: **Cleaning**: fears of contamination and ritualised cleaning. **Symmetry**: obsessions with order and symmetry, accompanied by repetitive arranging, ordering, or counting. **Forbidden or taboo thoughts**: intrusive aggressive, sexual, or religious obsessions with related compulsions. **Harm**: intrusive thoughts or images of harm to self or others, accompanied by checking behaviours. **Hoarding**: compulsive accumulation and difficulty discarding possessions. Such symptoms may reduce awareness, impair performance, distort judgement, and diminish energy, initiative, and perseverance, thereby interfering with safe and effective execution of both routine and emergency duties.
Possible medical incident(s)	**Avoidance behaviour:** Withdrawal from duties or refusal to engage in required tasks. **Affective responses:** Marked anxiety, panic attacks, or strong feelings of disgust when obsessions or compulsions are triggered. **Reduced performance:** Loss of focus, slowed task execution, or distraction by compulsive rituals. **Misjudgement and overestimation of threat:** Inflated sense of responsibility, excessive checking, or disproportionate responses to minor risks. **Focus on irrelevant activities:** Prioritisation of compulsive behaviours over operational duties, compromising safety.
General likelihood	**Comorbidity:** Highly prevalent. 76% of patients with OCD have a lifetime history of another anxiety disorder (e.g. panic disorder, social anxiety disorder, generalised anxiety disorder, or specific phobia). 63% have a lifetime history of a mood disorder, most commonly major depressive disorder (21%) [365] 23–32% have comorbid obsessive-compulsive personality disorder[366]. Suicidality:

[365] Ruscio AM, Stein DJ, Chiu WT, Kessler RC. The epidemiology of obsessive-compulsive disorder in the National Comorbidity Survey Replication. Mol Psychiatry 2010; 15:53.
[366] Pinto A, Eisen JL. Personality features of OCD and spectrum conditions. In: The Oxford Handbook of Obsessive Compulsive and Spectrum Disorders, Steketee G (Ed), Oxford University Press, New York 2012.

	Suicidal thoughts occur in up to 50% of individuals with OCD [367]. Suicide attempts are reported in up to 25%, with risk increased by comorbid depression. Course: Mean age of onset is 19.5 years in the US, with 25% of cases beginning by age 14 [368] [369]. Untreated, OCD is usually chronic with fluctuating symptoms; some have episodic courses, and a minority deteriorate progressively [370] [371]. Long-term remission rates are low: a 40-year follow-up study of 144 patients found only 20% achieved remission [372]. Even with treatment, only some adults will recover over time [373]. Treatment: Meta-analysis of eight randomised trials (241 patients) found CBT approaches reduced symptoms by 50–70% compared with treatment as usual [374]. The therapies lead to average symptom reduction between 50 and 70% [375].
Consequences	**Individual:** Ranging from minor impairment to severe disability, including suicidality. **Crew:** Ranging from minor disruption to significant compromise of teamwork and cohesion. **Ship:** Ranging from minor operational inefficiency to serious safety risks in emergencies**.**
Unmitigated risk	OCD is usually incompatible with work on board ships due to the chronicity of symptoms, high comorbidity, and potential for severe impairment. **Unmitigated risk is unacceptable,** given the likelihood of distraction, avoidance, and impaired judgement during critical duties.
Mitigation	Mitigation is possible only in carefully selected cases and requires clear evidence of sustained symptom control and functional stability. Measures may include: • Specialist psychiatric treatment, including cognitive-behavioural therapy with exposure and response prevention, and pharmacotherapy with SSRIs or other evidence-based agents [Reference needed]. • Demonstrated adherence to treatment over a prolonged period, with documented improvement and stability. • Absence of significant comorbidity, particularly major depressive disorder, psychosis, substance misuse, or personality disorder that may impair functioning.

[367] Torres AR, Ramos-Cerqueira AT, Ferrão YA, et al. Suicidality in obsessive-compulsive disorder: prevalence and relation to symptom dimensions and comorbid conditions. J Clin Psychiatry 2011; 72:17.
[368] Kessler RC, Chiu WT, Demler O, et al. Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry 2005; 62:617.
[369] Ruscio AM, Stein DJ, Chiu WT, Kessler RC. The epidemiology of obsessive-compulsive disorder in the National Comorbidity Survey Replication. Mol Psychiatry 2010; 15:53.
[370] Skoog G, Skoog I. A 40-year follow-up of patients with obsessive-compulsive disorder [see commetns]. Arch Gen Psychiatry 1999; 56:121.
[371] Ravizza L, Maina G, Bogetto F. Episodic and chronic obsessive-compulsive disorder. Depress Anxiety 1997; 6:154.
[372] Skoog G, Skoog I. A 40-year follow-up of patients with obsessive-compulsive disorder [see commetns]. Arch Gen Psychiatry 1999; 56:121.
[373] Eisen JL, Pinto A, Mancebo MC, et al. A 2-year prospective follow-up study of the course of obsessive-compulsive disorder. J Clin Psychiatry 2010; 71:1033.
[374] Gava I, Barbui C, Aguglia E, et al. Psychological treatments versus treatment as usual for obsessive compulsive disorder (OCD). Cochrane Database Syst Rev 2007; :CD005333.
[375] Abramowitz, JS. Understanding and treating obsessive-compulsive disorder: A cognitive-behavioral approach, Erlbaum, Mahwah NJ 2006.

	• Documented functional capacity, including reliable performance in ordinary and emergency duties in a comparable workplace setting. • Regular specialists follow-up, confirming stability and absence of relapse. • Clear evidence that compulsions or obsessions no longer interfere with attention, judgement, or operational performance. • No history of recent suicidal ideation or behaviour, and no current risk indicators. • Restrictions may be considered in exceptional cases (e.g., limited duties, coastal waters), but only where symptoms are minimal, stable, and well-controlled.
Mitigated risk	**Individual:** Ranging from acceptable to unacceptable, depending on treatment response and symptom control. **Crew:** Ranging from acceptable to unacceptable, depending on impact on teamwork and behaviour. **Ship:** Ranging from acceptable to unacceptable, depending on ability to maintain focus and avoid compulsive distraction.

22.6.5 PERSONALITY AND DEVELOPMENT DISORDERS

F 00-99	Other disorders, e.g. disorders of personality, attention (e.g. ADHD), development (e.g. autism) Impairment of performance and reliability and impact on relationships	P – If considered to have safety-critical consequences	R – As appropriate if capable of only limited duties	No anticipated adverse effects while at sea. No incidents during previous periods of sea service.

22.6.5.1 F90 – HYPERKINETIC DISORDERS (ADHD)

Reviewed 2025-12-03

Significance	Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental condition characterised by persistent patterns of inattention, hyperactivity, and impulsivity. In maritime contexts, these symptoms may impair vigilance, reliability, and interpersonal functioning, with potential consequences for safety-critical duties. **Inattention:** Reduced situational awareness, errors in navigation or technical tasks. **Impulsivity:** Unsafe decision-making, risk-taking behaviour, poor compliance with safety protocols. **Hyperactivity:** Restlessness interfering with concentration, fatigue, or irritability. **Interpersonal impact:** Conflict with crew, difficulty following instructions, impaired teamwork. **Medication effects:** Potential adverse effects (e.g. insomnia, cardiovascular strain) may impair performance.
Possible medical incident(s)	**Loss of focus:** Failure to monitor instruments or maintain vigilance. **Impulsive behaviour:** Unsafe manoeuvres, disregard for safety procedures. **Conflict with crew:** Irritability, poor communication, or disruptive behaviour. **Fatigue or insomnia:** Reduced resilience and slower reaction times. **Medication side-effects:** Cardiovascular symptoms, agitation, or impaired sleep affecting operational safety.

General likelihood	The WHO World Mental Health Survey Initiative concluded that ADHD is significantly associated with impaired role performance. Across the total sample, the annualised individual-level regression coefficient indicated 22.1 additional days out of role compared with subjects without ADHD. Both days out of role and reductions in the quantity and quality of role performance were statistically significant in the combined data. On average, workers with ADHD experienced 8.4 excess days out of role, 21.7 days of reduced work quantity, and 13.6 days of reduced work quality. Extrapolation of these individual-level effects to the civilian labour force produced an estimate of 143.8 million lost workdays attributable to ADHD each year in the countries surveyed [376]. In addition, one study estimated that adult ADHD was associated with a 4–5 per cent reduction in overall work performance, a 2.1 relative odds of sickness absence, and a 2.0 relative odds of workplace accidents and injuries [377]. Attention-Deficit/Hyperactivity Disorder (ADHD) is usually diagnosed in childhood, and longitudinal studies have documented the persistence of the disorder into adulthood in the majority of cases. Most studies report that 40–60 per cent of patients continue to experience significant ADHD-related difficulties in adult life [378] [379] [380] [381]. Some adults present with impairment only later, when confronted with increasingly complex tasks characteristic of adulthood that cannot be managed with their existing neuropsychological repertoire. The prevalence of ADHD in adulthood is estimated at 1–2 per cent of the population [382]. A systematic review of adverse occupational outcomes found that adults with ADHD had higher levels of unemployment compared with control groups [383]. Those who are employed frequently experience workplace impairment and reduced productivity, and are at increased risk of accidents, trauma, and workplace injuries, particularly traffic accidents. Additional problems associated with adult ADHD include reduced educational attainment, higher rates of substance misuse, and increased criminality [384] [385] [386] [387]. The domains of emotional, educational, and social adjustment follow variable courses in individuals with ADHD, ranging from poor to good. Persistence of the

[376] R de Graaf, R C Kessler, J Fayyad, M ten Have, J Alonso, M Angermeyer, G Borges, K Demyttenaere, I Gasquet, G de Girolamo, J M Haro, R Jin, E G Karam, J Ormel, J Posada-Villa. The prevalence and effects of adult attention-deficit/hyperactivity disorder (ADHD) on the performance of workers: results from the WHO World Mental Health Survey Initiative. Occup Environ Med 2008;65:835-842. Doi:10.1136/oem.2007.038448

[377] Kessler RC: The prevalence and workplace costs of adult attention deficit hyperactivity disorder in a large manufacturing firm. Psychol Med. 2009, 39 (1): 137-147. 10.1017/S0033291708003309.

[378] Barkley RA, Fischer M, Smallish L, Fletcher K. The persistence of attention-deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. J Abnorm Psychol 2002; 111:279.

[379] Mannuzza S, Klein RG, Bessler A, et al. Adult psychiatric status of hyperactive boys grown up. Am J Psychiatry 1998; 155:493.

[380] Weiss G, Hechtman L, Milroy T, Perlman T. Psychiatric status of hyperactives as adults: a controlled prospective 15-year follow-up of 63 hyperactive children. J Am Acad Child Psychiatry 1985; 24:211.

[381] Küpper T, Haavik J, Drexler H, et al. The negative impact of attention-deficit/hyperactivity disorder on occupational health in adults and adolescents. Int Arch Occup Environ Health 2012; 85:837.

[382] Thomsen PH, Damm D. ADHD hos voksne. Ugeskr Læger 2008; 170: 3395

[383] Biederman J, Mick E, Faraone SV. Normalized functioning in youths with persistent attention-deficit/hyperactivity disorder. J Pediatr 1998; 133:544.

[384] Barkley RA, Fischer M, Smallish L, Fletcher K. The persistence of attention-deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. J Abnorm Psychol 2002; 111:279.

[385] Mannuzza S, Klein RG, Bessler A, et al. Adult psychiatric status of hyperactive boys grown up. Am J Psychiatry 1998; 155:493.

[386] Weiss G, Hechtman L, Milroy T, Perlman T. Psychiatric status of hyperactives as adults: a controlled prospective 15-year follow-up of 63 hyperactive children. J Am Acad Child Psychiatry 1985; 24:211.

[387] Sobanski E, Brüggemann D, Alm B, et al. Psychiatric comorbidity and functional impairment in a clinically referred sample of adults with attention-deficit/hyperactivity disorder (ADHD). Eur Arch Psychiatry Clin Neurosci 2007; 257:371.

	disorder is not associated with a uniform functional outcome, but rather with a wide spectrum of adjustment trajectories [388] [389]. Numerous rating scales exist for screening and diagnosing ADHD in accordance with DSM-IV, though modifications are required for DSM-5. Fourteen adult scales have been validated in 35 studies (UpToDate), with the Conners' Adult Rating Scale (CAARS) and the Wender Utah Rating Scale (short version) demonstrating the most robust psychometric properties and content validity [390]. The rate of comorbid psychiatric disorders in adults with ADHD tends to increase with age [391] [392] [393]. Common comorbidities include anxiety, depression, substance-use disorder, and antisocial personality disorder. In US samples, adults with ADHD compared with the general population demonstrated the following odds ratios (OR) [394]: Mood disorders, OR = 2.7 to 7.5 (95% CI 3.0–8.2) Anxiety disorders, OR = 1.5 to 5.5 (95% CI 2.4–5.5) Substance use disorders (SUD), OR = 1.5 to 7.9 (95% CI 1.4–6.5) Intermittent explosive disorder, OR=3.7 (95% CI 2.2-6.2) Similar findings have been reported internationally [395] Mood disorders, OR = 3.9 (95% CI 3.0–5.1) Anxiety disorders, OR = 4.0 (95% CI 3.0–5.2) SUD, OR = 4 (95% CI 2.8–5.8)
Consequences	**Individual:** Ranging from minor impairment to serious disability, depending on symptom control. **Crew:** Ranging from minor disruption to significant compromise of teamwork and cohesion. **Ship:** Ranging from minor inefficiency to serious safety risks in emergencies.
Unmitigated risk	Potentially unacceptable, particularly in safety-critical roles, due to inattention, impulsivity, and risk-taking behaviour. Risk is heightened if comorbidities or medication side-effects are present
Mitigation	**Specialist assessment:** Psychiatric or neuropsychological evaluation of symptom severity, functional impact, and treatment response. **Medical treatment:** Optimisation of pharmacotherapy; monitoring for adverse effects. **Behavioural strategies:** Structured routines, task management, and coping techniques. **Workplace reports:** Feedback on performance in both routine and emergency duties.

[388] Biederman J, Mick E, Faraone SV. Normalized functioning in youths with persistent attention-deficit/hyperactivity disorder. J Pediatr 1998; 133:544.
[389] Biederman J, Mick E, Faraone SV. Age-dependent decline of symptoms of attention deficit hyperactivity disorder: impact of remission definition and symptom type. Am J Psychiatry 2000; 157:816.
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[392] Cumyn L, French L, Hechtman L. Comorbidity in adults with attention-deficit hyperactivity disorder. Can J Psychiatry 2009; 54:673.
[393] Biederman J. Impact of comorbidity in adults with attention-deficit/hyperactivity disorder. J Clin Psychiatry 2004; 65 Suppl 3:3.
[394] Kessler RC, Adler L, Barkley R, et al. The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. Am J Psychiatry 2006; 163:716.
[395] Fayyad J, De Graaf R, Kessler R, et al. Cross-national prevalence and correlates of adult attention-deficit hyperactivity disorder. Br J Psychiatry 2007; 190:402.

	Role allocation: Restrict safety-critical duties unless stability and adequate symptom control are demonstrated**.** **Ongoing follow-up:** Regular monitoring to ensure adherence and functional stability.
Mitigated risk	**Individual:** Ranging from acceptable to unacceptable, depending on treatment response and symptom control. **Crew:** Ranging from acceptable to unacceptable, depending on interpersonal functioning and behaviour. **Ship:** Ranging from acceptable to unacceptable, depending on vigilance and reliability under stress.

22.6.5.2 F84 - AUTISM SPECTRUM DISORDERS (ASD)

Reviewed 2025-12-03

Significance	Autism Spectrum Disorders (ASD), including presentations formerly classified as Asperger's syndrome, are characterised by persistent difficulties in social interaction and communication, alongside restricted and repetitive behaviours. Individuals with Asperger's typically demonstrate average or above-average intelligence and intact language development, but may struggle to integrate within groups, often appearing detached or preoccupied with their own interests. Communication may be literal, with limited understanding of metaphor, humour, sarcasm, or teasing. Speech can be didactic, theatrical, or exaggerated, and eye contact or non-verbal cues may be inappropriate. Behavioural disturbances, perseveration (involuntary repetition of actions), and narrow, intense interests are common. Cognitive rigidity often results in intolerance of change and difficulty adapting to new routines. In maritime contexts, these features can pose safety threats: communication may be misunderstood, planning and prioritisation impaired, and interpersonal relations strained. Sensitivity to criticism, coupled with blunt criticism of others, may disrupt crew cohesion. Perfectionism and rigidity can be particularly problematic in the 24-hour environment of shipboard life. ASD is frequently associated with comorbid conditions, including anxiety, ADHD, depression, affective disorders, learning difficulties, and tics. Studies suggest that up to 74 per cent of individuals have at least one additional diagnosis, with ADHD more common in youth and depression more frequent in adults [396].
Possible medical incident(s)	**Social interaction impairments:** inappropriate eye contact, limited reciprocity, failure to form peer relationships, lack of spontaneous sharing of interests or achievements. **Restricted and repetitive behaviours:** intense preoccupation with narrow interests, inflexible adherence to routines, stereotyped motor mannerisms, or persistent focus on parts of objects. **Functional impairment:** clinically significant disruption of occupational, social, or other important activities.

[396] Mattila ML, Hurtig T, Haapsamo H, Jussila K, Kuusikko-Gauffin S, Kielinen M, Linna SL, Ebeling H, Bloigu R, Joskitt L, Pauls DL, Moilanen I: Comorbid psychiatric disorders associated with Asperger syndrome/high-functioning autism: a community- and clinic-based study. J Autism Dev Disord. 2010;40(9):1080

	Operational risks: disorganisation, lapses of memory, over-focus on specific interests at the expense of routine duties, and impaired planning.
General likelihood	The likelihood of incidents varies considerably between individuals, depending on severity, comorbidity, and adaptability. Some individuals function well with support, while others experience significant impairment. Risk cannot be reliably assessed on diagnostic label alone; personalised evaluation is essential.
Consequences	**Individual:** From minor impairment to serious disability. **Crew:** From minor disruption to significant compromise of cohesion and teamwork. **Ship:** From minor inefficiency to serious safety risks in emergencies
Unmitigated risk	Ranging from acceptable to not acceptable, depending on severity of symptoms and performance capability.
Mitigation	Possible mitigating Factors **Certificate limitation:** Restricting the validity period (e.g. less than two years) allows closer monitoring of stability and treatment response. **Restriction of duties:** Excluding safety-critical tasks or limiting responsibilities to roles aligned with strengths reduces the likelihood of incidents. **Restriction of sailing area:** Limiting service to areas with ready access to medical support mitigates risk in case of deterioration. **Structured routines**: Establish predictable schedules and clear task allocation to reduce anxiety and rigidity. **Clear communication**: Use direct, unambiguous instructions; supplement with written or visual aids where appropriate. **Role matching:** Assign duties that align with strengths (e.g. technical precision, attention to detail) while avoiding tasks requiring rapid social adaptation. **Crew awareness:** Provide basic training for colleagues to foster understanding of ASD traits and reduce interpersonal conflict. **Supportive supervision:** Regular monitoring and constructive feedback to identify early signs of stress or overload. **Environmental adjustments:** Minimise sensory overload (noise, lighting, crowding) and provide quiet spaces for decompression. **Comorbidity management**: Ensure effective treatment of associated conditions such as anxiety, depression, or ADHD. **Workplace reports:** Collect evidence of performance in both routine and emergency duties to inform ongoing risk assessment.
Mitigated risk	When mitigation is effective, risk assessment may shift from unacceptable to acceptable for the individual, crew, and ship operations. The seafarer's doctor should document: Which mitigating factors are in place, How reliably they are applied, and Whether they demonstrably reduce risk in practice.

22.6.5.3 F95 – TOURETTE'S SYNDROME

Reviewed 2025-12-03

Significance	Tourette's syndrome is characterised by multiple motor tics and one or more vocal tics persisting for at least a year. In maritime settings, the disorder may affect safety, communication, and teamwork depending on severity and comorbidities.
Possible medical incident(s)	**Sudden motor tics** interfering with machinery operation or safe movement on deck. **Vocal tics** disrupting clear communication, especially in emergencies. **Exacerbation of comorbid conditions** (ADHD, OCD, anxiety) leading to impaired judgement or concentration.
General likelihood	**Mild cases:** low likelihood of incidents. **Moderate cases:** occasional interference, particularly under stress. **Severe cases:** high likelihood of incidents due to unpredictability and frequency of tics. Comorbidity is frequent and imposes a significant additional burden [397] [398]. In a large international registry of 3500 patients with TS, comorbid conditions included ADHD (60 percent), OCD (27 percent), obsessive-compulsive behavior (32 percent), learning disorder (23 percent), and conduct disorder/oppositional defiant disorder (15 percent) [399]. One study showed that self-injurious behaviour is present in approximately 17 percent of patients with TS [400].
Consequences	Reduced operational safety (risk of accidents or near-misses). Impaired communication in critical situations. Potential disruption of team cohesion and efficiency
Unmitigated risk	**Mild cases:** low to moderate. **Moderate cases:** moderate to high. **Severe cases:** high, with unacceptable safety implications.
Mitigation	Stable treatment (behavioural therapy, medication if tolerated). Demonstrated ability to perform duties safely despite symptoms. Role assignment avoiding high-risk machinery operation if tics are moderate. Regular medical review to monitor stability and comorbidities.
Mitigated risk	**Mild, well-controlled cases:** residual risk usually acceptable **Moderate, controlled cases:** residual risk probably acceptable, manageable with restrictions. **Severe, uncontrolled cases:** usually not acceptable.
Recommendation	**Fit for duty:** Mild, well-controlled Tourette's, no significant interference with safety or communication. **Fit with restrictions:** Moderate, controlled Tourette's, requiring role limitations and periodic review. **Unfit:** Severe, unpredictable Tourette's or significant comorbidities compromising safety.

[397] Hirschtritt ME, Lee PC, Pauls DL, et al. Lifetime prevalence, age of risk, and genetic relationships of comorbid psychiatric disorders in Tourette syndrome. JAMA Psychiatry 2015; 72:325.
[398] Singer HS. Tics and Tourette Syndrome. Continuum (Minneap Minn) 2019; 25:936.
[399] Freeman RD, Fast DK, Burd L, et al. An international perspective on Tourette syndrome: selected findings from 3,500 individuals in 22 countries. Dev Med Child Neurol 2000; 42:436.
[400] Baizabal-Carvallo JF, Alonso-Juarez M, Jankovic J. Self-injurious behavior in Tourette syndrome. J Neurol 2022; 269:2453.

22.7 G 00-99 DISEASES OF THE NERVOUS SYSTEM

22.7.1 G40-41 - EPILEPSY

G 40-41	Single seizure Harm to ship, others and self from seizures	Single seizure T – While under investigation and for one year after seizure	R – One year after seizure and on stable medication. Non-watchkeeping duties; in near-coastal waters.	One year after seizure and one year after end of treatment. If provoked, there should be no continuing exposure to the provoking agent.
	Epilepsy – No provoking factors (multiple seizures) Harm to ship, others and self from seizures	T – While under investigation and for two years after last seizure P – Recurrent seizures, not controlled by medication	R – Off medication or on stable medication with good compliance: case-by-case assessment of fitness, restricted to non-watchkeeping duties in near-coastal waters	Seizure-free for at least the last ten years, has not taken anti-epilepsy drugs during that ten-year period and does not have a continuing likelihood of seizures
	Epilepsy provoked by alcohol, medication, head injury (multiple seizures) Harm to ship, others and self from seizures	T – While under investigation and for two years after last seizure P – Recurrent seizures, not controlled by medication	R – Case-by-case assessment after two years' abstention from any known provoking factors, seizure-free and either off medication or on stable medication with good compliance; restricted to non-watchkeeping duties in near-coastal waters	Seizure-free for at least the last five years, has not taken anti-epilepsy drugs during that five-year period, provided there is not continuing exposure to the provoking agent

22.7.1.1 EPILEPSY

Reviewed 2025-12-10

Significance	Epilepsy is a heterogeneous condition characterised by recurrent seizures due to disturbances in cerebral function. Seizures are broadly classified into generalised types (approximately 40 per cent) and focal types (approximately 60 per cent), each with multiple subcategories. Acute symptomatic seizures account for up to 40 per cent of first episodes [401] [402], frequently arising from structural brain abnormalities or metabolic disturbances. In adults, common causes include traumatic brain injury and intracranial tumours, although aetiology is often multifactorial. Both seizures themselves and the adverse effects of antiepileptic treatment may compromise operational safety at sea. Antiepileptic drugs are associated with drowsiness, dizziness, blurred vision, fatigue, headache, sleep disturbance,

[401] Mauritz M, Hirsch LJ, Camfield P, et al. Acute symptomatic seizures: an educational, evidence-based review. Epileptic Disord 2022; 24:26.
[402] Hauser WA, Beghi E. First seizure definitions and worldwide incidence and mortality. Epilepsia 2008; 49 Suppl 1:8.

	and in some cases psychiatric or behavioural changes. These side effects may impair vigilance, reaction time, and concentration, thereby posing a safety risk depending on the individual's duties. For seafarers, the significance of epilepsy lies in the potential for sudden incapacitation and impaired performance in safety-critical roles. The risk of seizure can never be fully excluded, whether or not treatment is in place. Furthermore, the adverse effects of treatment may themselves constitute a hazard. Although long-term therapy may lead to partial adaptation, residual impairment of alertness and cognitive function may persist. Consequently, epilepsy represents a material safety concern in maritime operations, particularly for personnel engaged in bridge watch, engine control, or other safety-critical functions.
Possible medical incident(s)	Seizure occurrence (generalised tonic–clonic, focal, absence, etc.) Injury sustained during seizure (falls, burns, drowning risk) Adverse drug reactions (sedation, impaired vigilance, psychiatric symptoms) Non-compliance leading to breakthrough seizures Loss of situational awareness, impaired reaction time (operational incidents)
General likelihood	In population-based studies, acute symptomatic seizures constitute up to 40% of first seizures [403] [404]. Common causes are brain abnormalities and metabolic disturbances. In adults brain damages and brain tumors are frequent causes, although causes often are multifactorial. **Effect of treatment and prognosis:** Approximately 50 per cent of patients with a new diagnosis of epilepsy achieve seizure control with the first antiepileptic drug prescribed [405]. Should the initial agent fail, seizure control may be attained with an alternative, and around two-thirds of individuals with epilepsy can achieve adequate control with monotherapy. Up to 80 per cent may become seizure-free under antiepileptic treatment [406] [407] [408]. A systematic review demonstrated that 42 per cent experienced a recurrent seizure within two years of follow-up without treatment [409]. The risk of recurrence is lower for generalised seizures compared with partial seizures. Most patients with epilepsy will achieve good or complete seizure control with pharmacological therapy; however, a proportion will never become seizure-free. Approximately 70 per cent enter remission, defined as being seizure-free for five years with or without treatment. Between 20 and 30 per cent develop chronic epilepsy. Approximately 60 per cent of untreated individuals will not experience further seizures during a two-year observation period following the first seizure.

[403] Mauritz M, Hirsch LJ, Camfield P, et al. Acute symptomatic seizures: an educational, evidence-based review. Epileptic Disord 2022; 24:26.
[404] Hauser WA, Beghi E. First seizure definitions and worldwide incidence and mortality. Epilepsia 2008; 49 Suppl 1:8.
[405] Kwan P, Brodie MJ: Effectiveness of first antiepileptic drug. Epilepsia. 2001;42(10):1255.
[406] Luciano AL, Shorvon SD Ann: Results of treatment changes in patients with apparently drug-resistant chronic epilepsy. Neurol. 2007;62(4):375.
[407] Callaghan BC, Anand K, Hesdorffer D, Hauser WA, French JA: Likelihood of seizure remission in an adult population with refractory epilepsy. Ann Neurol. 2007;62(4):382.
[408] Schiller Y, Najjar Y: Quantifying the response to antiepileptic drugs: effect of past treatment history. Neurology. 2008;70(1):54.
[409] Ooi, Suyi et al. Prediction begins with diagnosis: Estimating seizure recurrence risk in the First Seizure Clinic Seizure - European Journal of Epilepsy, Volume 122, 87 – 95.

Factors that may trigger seizures.
A range of factors may precipitate seizures in predisposed individuals, including sleep deprivation, alcohol consumption, excessive use or abrupt withdrawal from excessive use, hypoglycaemia, photic stimulation (flashing lights, television, video games, flickering sunlight through a helicopter rotor or trees along a road), stress, and hyperventilation. Irregular circadian rhythm and irregular meals, often resulting from shift work or overtime associated with port operations, may lead to both sleep deprivation and hypoglycaemia. Helicopter travel to and from vessels may also induce flicker stimulation.

Low alcohol consumption (one to two drinks per day) may not affect seizure frequency or serum concentrations of antiepileptic medicines (ASM) in patients with well-controlled epilepsy.
Higher alcohol intake (three or more drinks per day) increases seizure risk, particularly during the withdrawal period (7–48 hours after the last drink), and such practice should be strongly discouraged [410].
Consumption of coffee or tea is not considered harmful provided daily caffeine intake remains below 400 mg (approximately five cups of coffee) [411]. Energy drinks with high caffeine content should be specifically discouraged.

Where precipitating factors are known and can be avoided, the likelihood of seizure recurrence is low. The probability of recurrence is lower for generalised tonic–clonic seizures than for partial seizures.

A study population of 330 patients [412] (see Table below) who had been seizure-free for at least two years (the usual threshold for considering treatment withdrawal) underwent individual risk assessment and were offered the option of discontinuing therapy. Of these, 225 individuals were included in a five-year follow-up. Those who discontinued treatment had a 2.9-fold higher risk of recurrence compared with those who continued. Recurrence risk was associated with duration of active disease, number of seizure-free years under treatment, and presence of psychiatric symptoms.

Group of patients	Per cent without seizures on different points of time after cessation of therapy				
	6 months	12 months	24 months	36 months	60 months
Treatment discontinued	**88 %**	**74 %**	**57 %**	**51 %**	**48 %**
Treatment ongoing	95 %	91 %	82 %	80 %	68 %

After Specchio et al: Discontinuing antiepileptic drugs in patients who are seizure free on monotherapy.

Non-compliance
Up to 50 per cent of patients with epilepsy may not take their medication as prescribed; more than half of those assessed in emergency departments for recurrent seizures were found to be non-adherent. Non-compliance is associated not only with increased seizure frequency but also with elevated risk of mortality, hospitalisation, and injury.

[410] Hauser WA, Ng SK, Brust JC. Alcohol, seizures, and epilepsy. Epilepsia 1988; 29 Suppl 2:S66.
[411] Asadi-Pooya AA, Zeraatpisheh Z, Rostaminejad M, Damabi NM. Caffeinated drinks, fruit juices, and epilepsy: A systematic review. Acta Neurol Scand 2022; 145:127.
[412] Specchio LM, Tramacere L, La Neve A, Bevhi E: Discontinuing antiepileptic drugs in patients who are seizure free on monotherapy. J Neurol Neurosurg Psychiatry. 2002; 72(1):22.

	An unexpected increase in seizure frequency or severity, or either subtherapeutic or supratherapeutic serum drug concentrations, may indicate non-compliance. Serum levels, however, may fluctuate due to multiple factors and should therefore be interpreted with caution [413] [414]. The variation in likelihood is highly variable, depending on type of seizures, age, duration, precipitating factors, effect of treatment, lifestyle, circumstances. Likelihood can vary from (very low)/low to high.
Consequences	**Individual:** Injury, reduced fitness for duty, impaired career progression, psychosocial impact, delayed hospital treatment, possibly worse outcome than on shore **Crew:** Caring for il, increased workload, psychological stress, risk in connection with evacuation procedures. **Ship:** Disruption of operations, safety compromise in navigation or cargo operations, potential accidents, possible delay caused by diversion and reputational and regulatory consequences,
Unmitigated risk	**Usually unacceptable.** Without treatment or preventive measures, the risk of seizure recurrence ranges from low to high depending on seizure type, precipitating factors, and individual compliance. Unmitigated risk includes sudden incapacitation, injury, and operational compromise, particularly in safety-critical functions.
Mitigated risk	**Individual:** From acceptable to not acceptable **Crew:** From acceptable to not acceptable **Ship:** From acceptable to not acceptable With appropriate treatment, adherence, and avoidance of triggers, seizure control is achieved in up to 80% of patients. Approximately 70% may enter long-term remission. Mitigated risk for the individual may be acceptable in non-safety-critical roles, but residual risk persists for bridge watch and other critical functions. Crew and ship risk may be reduced to acceptable levels provided occupational restrictions and monitoring are enforced.
Recommendation	Individualised assessment is essential. Specialist evaluation should include seizure type, treatment response, compliance, and precipitating factors, with explicit consideration of risk categories (very low, low, moderate, high) as defined in maritime regulations. Some specific challenges are discussed below.

[413] Faught E, Duh MS, Weiner JR, et al. Nonadherence to antiepileptic drugs and increased mortality: findings from the RANSOM Study. Neurology 2008; 71:1572.
[414] Manjunath R, Davis KL, Candrilli SD, Ettinger AB. Association of antiepileptic drug nonadherence with risk of seizures in adults with epilepsy. Epilepsy Behav 2009; 14:372.

22.7.1.2 EEG AND THE DIAGNOSIS OF EPILEPSY

Reviewed 2025-12-10

Electroencephalography (EEG) should not be accorded undue emphasis in the diagnostic assessment of epilepsy. EEG findings, in isolation, are insufficient either to establish or to exclude a diagnosis of epilepsy. This is because:

- Many EEG abnormalities may arise from a wide range of neurological disorders.
- A single disorder may produce diverse EEG manifestations.
- Intermittent EEG abnormalities, including epileptiform discharges ***(IED)*** during seizures, may occur infrequently and may not be captured during the recording period.
- EEG abnormalities may be observed in individuals without any clinical evidence of disease.
- Not all cerebral disorders are associated with EEG changes, particularly when pathological alterations are minor, chronic, or located deep within the brain tissue.

Accordingly, when clinical evaluation strongly suggests epilepsy but EEG findings are non-pathological, the clinical assessment must be regarded as of greater diagnostic significance than the laboratory investigation.

EPILEPTIFORM ACTIVITY WITHOUT SEIZURE (INTERICTAL EPILEPTIFORM DISCHARGES, IED) ON EEG

Diagnostic Criteria

The diagnostic criteria for interictal epileptiform discharges (IED) are as follows:

- Paroxysmal findings on EEG that are clearly distinct from the individual's background activity.
- An abrupt change in polarity, lasting several milliseconds.
- Each paroxysm may have a duration of up to 200 ms.
- Spikes typically last less than 70 ms.
- Sharp waves usually last between 70 and 200 ms.
- The discharge must correspond to a physiological cortical area.
- Paroxysms must not represent benign variants such as "wicket spikes", "small sharp spikes", or "vertex waves".

Sensitivity

IEDs are identified in 20–55% of individuals with epilepsy on the first routine EEG [415] [416] [417] [418].
The detection rate increases to 80–90% when four or more consecutive EEGs are performed [419] [420] [421] [422] [423].

In one epilepsy monitoring unit study, 43% of patients demonstrated IEDs within the first hour of recording; this increased to 89% after 24 hours [424].

415 Glick TH. The sleep-deprived electroencephalogram: evidence and practice. Arch Neurol 2002; 59:1235.
416 King MA, Newton MR, Jackson GD, et al. Epileptology of the first-seizure presentation: a clinical, electroencephalographic, and magnetic resonance imaging study of 300 consecutive patients. Lancet 1998; 352:1007.
417 Marsan CA, Zivin LS. Factors related to the occurrence of typical paroxysmal abnormalities in the EEG records of epileptic patients. Epilepsia 1970; 11:361.
418 van Donselaar CA, Schimsheimer RJ, Geerts AT, Declerck AC. Value of the electroencephalogram in adult patients with untreated idiopathic first seizures. Arch Neurol 1992; 49:231.
419 King MA, Newton MR, Jackson GD, Fitt GJ, Mitchell LA, Silvapulle MJ, Berkovic SF: Epileptology of the first-seizure presentation: a clinical, electroencephalographic, and magnetic resonance imaging study of 300 consecutive patients. Lancet. 1998;352(9133):1007
420 Marsan CA, Zivin LS. Factors related to the occurrence of typical paroxysmal abnormalities in the EEG records of epileptic patients. Epilepsia 1970; 11:361.
421 Doppelbauer A, Zeitlhofer J, Zifko U, et al. Occurrence of epileptiform activity in the routine EEG of epileptic patients. Acta Neurol Scand 1993; 87:345.
422 Goodin DS, Aminoff MJ. Does the interictal EEG have a role in the diagnosis of epilepsy? Lancet 1984; 1:837.
423 Salinsky M, Kanter R, Dasheiff RM. Effectiveness of multiple EEGs in supporting the diagnosis of epilepsy: an operational curve. Epilepsia 1987; 28:331.
424 Narayanan JT, Labar DR, Schaul N: Latency to first spike in the EEG of epilepsy patients. Seizure. 2008;17(1):34.

In a study of 100 adult patients with confirmed epileptic seizures, seven days of EEG monitoring revealed IEDs in 81% [425].
Another study in an epilepsy monitoring unit found that 86% of 119 patients with definite epilepsy exhibited IEDs within the first two days; 3% developed IEDs after two days, while 12% never demonstrated IEDs [426].

Specificity
IEDs are rare in patients without a history of seizures. Studies in healthy flight personnel demonstrated a prevalence of 0.5% [427] [428]. In hospitalised adults with neurological or psychiatric illness, the prevalence has been reported at 2.0–2.6% [429].
Certain conditions may be associated with IEDs without implying epilepsy. Examples include occipital spikes in blind individuals (particularly those congenitally blind) [430].
IEDs have also been observed in association with withdrawal from short-acting barbiturates and benzodiazepines, metabolic disturbances (e.g. hypocalcaemia, uraemia, dialysis disequilibrium), and elevated serum concentrations of lithium, neuroleptics (especially clozapine), bupropion, and tricyclic antidepressants, even in the absence of clinical seizures [431] [432] [433].

Conclusion
Electroencephalography cannot exclude the diagnosis of epilepsy when clinical suspicion is strong, nor can it confirm the diagnosis in the absence of clinically evident seizures.

22.7.1.3 POST-TRAUMATIC EPILEPSY

Reviewed 2025-12-10

All variants of secondary brain damage can lead to epilepsy, although it sometimes can take many years until epilepsy develops. While only 4% of all epilepsy cases are attributed to trauma, 13% of those cases that are of known cause are post-traumatic[434].

A distinct category of immediate seizures, those occurring upon or within seconds of impact, is controversial. Some feel that these are “convulsive concussions” and not epileptic events[435]; others include them in the category of early seizures because of their similar associated risk for post-traumatic epilepsy [436] [437].

425 Walczak, T, Scheuer, M, Resor, S, Pedley, T: Prevalence and features of epilepsy without interictal epileptiform discharges, Neurology. 1993; 43:287.
426 Friedman DE, Hirsch LJ: How long does it take to make an accurate diagnosis in an epilepsy monitoring unit? J Clin Neurophysiol. 2009;26(4):213.
427 Bennett DR. Spike-wave complexes in "normal" flying personnel. Aerosp Med 1967; 38:1276.
428 Gregory RP, Oates T, Merry RT. Electroencephalogram epileptiform abnormalities in candidates for aircrew training. Electroencephalogr Clin Neurophysiol 1993; 86:75.
429 Zivin L et al, Brain 1968 / Cavazzuti GB et al, Epilepsia 1980 / Bricgers SL, Arch Neurol 1987.
430 Wong VC. Cortical blindness in children: a study of etiology and prognosis. Pediatr Neurol 1991; 7:178.
431 Van Cott, AC, Brenner, RP. Drug Effects and Toxic Encephalopathy. In: Current practice of clinical electroencephalograhy, Ebersole, JS, Pedley, TA (Eds), Lippincott Williams and Wilkins, Philadephia 2003 p.463.
432 Malow BA, Reese KB, Sato S, et al. Spectrum of EEG abnormalities during clozapine treatment. Electroencephalogr Clin Neurophysiol 1994; 91:205.
433 Hughes JR, Schreeder MT. EEG in dialysis encephalopathy. Neurology 1980; 30:1148.
434 Annegers, JF. The epidemiology of epilepsy, In: The treatment of epilepsy: Principles and practice, 3rd ed, Wyllie, E (Ed), Lippincott Williams, Philadelphia 2001. p.135.
435 McCrory PR, Bladin PF, Berkovic SF: Retrospective study of concussive convulsions in elite Australian rules and rugby league footballers: phenomenology, aetiology, and outcome. BMJ. 1997;314(7075):171.
436 Barry E. Posttraumatic epilepsy, In: The treatment of epilepsy: Principles and practice, 3rd ed, Wyllie E (Ed), Lippincott Williams, Philadelphia 2001. p.609
437 Emanuelson I, Uvebrant P: Occurrence of epilepsy during the first 10 years after traumatic brain injury acquired in childhood up to the age of 18 years in the south western Swedish population-based series. Brain Inj. 2009;23(7):612.

Between 17 and 33% of patients with early seizures will develop epilepsy compared with a 2 percent overall incidence[438]. The 10-year incidence of epilepsy after traumatic brain injury (TBI) is estimated at about 2% [439]. The figures are disputed, and the results are different in different studies. In a context of risk assessment, one cannot, however, disregard these figures. There is a strong correlation between the egree of brain damage and the likelihood to develop posttraumatic epilepsy.

After commotio the RR (relative risk) was 2.2, after more serious damage RR was 7.4 for the development of epilepsy. After 10 years the likelihood is still increased: RR 1.51 and 4.29. The incidence of post-traumatic seizures (early) can be as high as from 6-10% in some studies and 30% in others [440] [441].

In one population-based cohort, the cumulative five-year probability of seizures was 0.5% in patients with mild injury (those with loss of consciousness or amnesia <30 minutes); 1.2 percent for those with moderate injuries (loss of consciousness for 30 minutes to 24 hours or skull fracture); and 10.0% in those with severe injuries (loss of consciousness or amnesia for more than 24 hours or subdural hematoma or cerebral contusion[442] . Another study of 647 hospitalized patients categorized TBI severity more traditionally with the Glasgow Coma Scale (GCS). The two-year incidence of epilepsy was 8.0% for GCS 13 to 15 and 16.8 percent for GCS 3 to 8 [443].

Other subsets of patients at much higher risk have been identified and include those with early seizures, intracranial hemorrhage or cerebral contusion, depressed skull fracture, and penetrating head injury[444] [445] [446] [447] [448]. Traumatic brain injury (TBI) associated with intracranial lesions on CT was associated with an 18% risk of late seizures in one series [449]. In penetrating missile combat injuries, the incidence is more than 50% [450] [451]. The requirement for neurosurgical procedure (hemorrhage evacuation, ventriculostomy) increased the risk, and multiple surgeries increased the risk over single surgeries [452].

22.7.1.4 SEIZURE PRECIPITATING FACTORS IN EPILEPSY

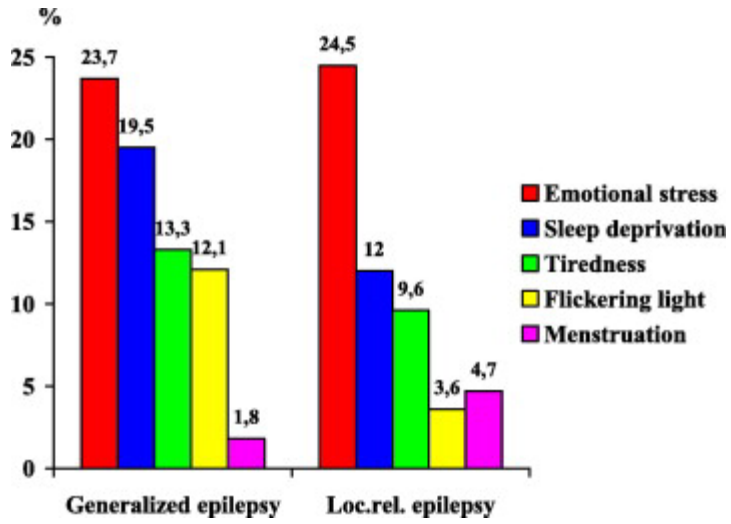
Reviewed 2025-12-10

Various factors may precipitate seizures in individuals with a predisposition. These include emotional stress, sleep deprivation, fatigue, exposure to flickering light, and menstruation.

438 Pagni CA, Zenga F: Posttraumatic epilepsy with special emphasis on prophylaxis and prevention. Acta Neurochir Suppl. 2005;93:27
439 Annegers JF, Grabow JD, Groover RV, Laws ER Jr, Elveback LR, Kurland LT: Seizures after head trauma: a population study. Neurology. 1980;30(7 Pt 1):683
440 Temkin NR: Risk factors for posttraumatic seizures in adults. Epilepsia. 2003;44 Suppl 10:18.
441 Frey LC: Epidemiology of posttraumatic epilepsy: a critical review. Epilepsia. 2003;44 Suppl 10:11
442 Annegers JF, Hauser WA, Coan SP, Rocca WA: A population-based study of seizures after traumatic brain injuries. N Engl J Med. 1998;338(1):20.
443 Analyzing risk factors for late posttraumatic seizures: a prospective, multicenter investigation. Englander J, Bushnik T, Duong TT, Cifu DX, Zafonte R, Wright J, Hughes R, Bergman W Arch Phys Med Rehabil. 2003;84(3):365.
444 Temkin NR. Risk factors for posttraumatic seizures in adults. Epilepsia 2003; 44 Suppl 10:18.
445 Frey LC. Epidemiology of posttraumatic epilepsy: a critical review. Epilepsia 2003; 44 Suppl 10:11.
446 Asikainen I, Kaste M, Sarna S. Early and late posttraumatic seizures in traumatic brain injury rehabilitation patients: brain injury factors causing late seizures and influence of seizures on long-term outcome. Epilepsia 1999; 40:584.
447 Raymont V, Salazar AM, Lipsky R, et al. Correlates of posttraumatic epilepsy 35 years following combat brain injury. Neurology 2010; 75:224.
448 Yeh CC, Chen TL, Hu CJ, et al. Risk of epilepsy after traumatic brain injury: a retrospective population-based cohort study. J Neurol Neurosurg Psychiatry 2013; 84:441.
449 Pagni CA, Zenga F: Posttraumatic epilepsy with special emphasis on prophylaxis and prevention. Acta Neurochir Suppl. 2005;93:27.
450 Pagni CA, Zenga F. Posttraumatic epilepsy with special emphasis on prophylaxis and prevention. Acta Neurochir Suppl 2005; 93:27.
451 Salazar AM, Jabbari B, Vance SC, Grafman J, Amin D, Dillon JD: Epilepsy after penetrating head injury. I. Clinical correlates: a report of the Vietnam Head Injury Study. Neurology. 1985;35(10):1406.
452 23.Englander J, Bushnik T, Duong TT, et al. Analyzing risk factors for late posttraumatic seizures: a prospective, multicenter investigation. Arch Phys Med Rehabil 2003; 84:365.

A study of 1,677 patients with epilepsy was conducted by Nakken et al.[453] using twins and their family members identified through the Norwegian Twin Panel (NTP), the Danish Twin Registry (DTR), and the Mid-Atlantic Twin Registry (MATR). Participants were asked to report seizure precipitants via a closed-ended questionnaire.

- Prevalence: 53% of respondents reported at least one seizure-precipitating factor, while 30% reported two or more.
- Most frequent precipitants: Emotional stress, sleep deprivation, and fatigue were the three most commonly cited triggers.
- Seizure type differences: Patients with generalised seizures appeared more sensitive to sleep deprivation and flickering light than those with partial seizures.
- Sex-specific differences: Women with partial seizures were more likely to report menstruation as a precipitant compared with women experiencing generalised seizures.
-



Distribution of five seizure-precipitating factors in those with generalized and localization-related epilepsy combined over populations, respectively. (Karl O. Nakken, Marit H. Solaas, Marianne J. Kjeldsen, Mogens L. Friis, John M. Pellock, Linda A. Corey)

Irregular diurnal rhythms and irregular meal patterns may arise from varying shift schedules and overtime work associated with port calls, loading, and unloading operations. Such circumstances can lead to sleep deprivation and hypoglycaemia.

In addition, helicopter travel may expose individuals to flickering light stimulation, which can act as a potential precipitant of seizures in susceptible persons.

22.7.1.5 TREATMENT OUTCOMES AND RISK OF RECURRENCE IN EPILEPSY

Reviewed 2025-12-10

Initial treatment response: Approximately half of patients newly diagnosed with epilepsy achieve effective seizure control with the first antiepileptic drug (AED) prescribed[454] [455].

[453] Nakken K O, Solaas M H, Kjeldsen M J, Friis M L, Pellock J M, Corey A L. Which seizure-precipitating factors do patients with epilepsy most frequently report? Epilepsy & Behaviour. 2005;6(1):85-89.
[454] Kwan P, Brodie MJ: Effectiveness of first antiepileptic drug. Epilepsia. 2001;42(10):1255.
[455] Brodie MJ, Perucca E, Ryvlin P, et al. Comparison of levetiracetam and controlled-release carbamazepine in newly diagnosed epilepsy. Neurology 2007; 68:402.

Second drug trial: If the initial agent proves ineffective, 10–20% of patients may respond successfully to a second AED[456].

Monotherapy: Around two-thirds of patients achieve seizure control with monotherapy[457] [458] [459].

Overall seizure freedom: Up to 80% of patients may become seizure-free with antiepileptic treatment
Risk of seizure recurrence after a first seizure: In one prospective hospital-based study, the risk of recurrence after a single unprovoked seizure was 14% at one year, 29% at three years, and 34% at five years. Most participants in this study received AED treatment [460]. Prospective, randomised trials of untreated individuals with a first unprovoked seizure estimate the two-year recurrence risk at 40–50% [461] [462] [463]. The risk of recurrence is greatest immediately after the first seizure and declines over time; 80–90% of patients who experience recurrence do so within two years [464] [465].

Long-term seizure control: Most individuals with epilepsy achieve good or complete seizure control with pharmacological treatment. However, 20–40% of patients are likely to develop refractory epilepsy, defined as therapeutic failure of three appropriately chosen and tolerated AEDs [466].

22.7.1.6 EPILEPSY – ADVERSE EFFECTS OF ANTIEPILEPTIC DRUG (AED) TREATMENT

Reviewed 2025-12-10

Common adverse effects of antiepileptic drugs (AEDs) include drowsiness, dizziness, visual disturbances, fatigue, headache, sleep disturbances, and, in some cases, hyperactivity. Additional adverse effects may comprise ataxia, depression, sedation, irritability, aggression, mood alterations, and confusion.

Such adverse effects may pose a safety risk on board, depending on the individual's position and specific job tasks. Accordingly, the seafarer's doctor must undertake a case-by-case assessment of the risks associated with AED use, taking into account the nature of the duties performed and the potential impact of these adverse effects on operational safety.

22.7.1.7 AED TREATMENT: MONITORING, ADJUSTMENT AND CESSATION

Reviewed 2025-12-10

Measurement of AED serum concentration is frequently undertaken to confirm that the administered dose achieves a level within the recognised therapeutic range for the specific medicine. It must be emphasised, however, that therapeutic serum concentration does not in itself guarantee clinical efficacy. Only longitudinal clinical observation can establish whether treatment is effective.

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[456] Bonnett LJ, Tudur Smith C, Donegan S, Marson AG. Treatment outcome after failure of a first antiepileptic drug. Neurology 2014; 83:552.
[457] Luciano AL, Shorvon SD Ann: Results of treatment changes in patients with apparently drug-resistant chronic epilepsy. Neurol. 2007;62(4):375.
[458] Callaghan BC, Anand K, Hesdorffer D, Hauser WA, French JA: Likelihood of seizure remission in an adult population with refractory epilepsy. Ann Neurol. 2007;62(4):382.
[459] Schiller Y, Najjar Y: Quantifying the response to antiepileptic drugs: effect of past treatment history. Neurology. 2008;70(1):54.
[460] Hauser WA, Rich SS, Annegers JF, Anderson VE. Seizure recurrence after a 1st unprovoked seizure: an extended follow-up. Neurology 1990; 40:1163.
[461] Kim LG, Johnson TL, Marson AG, et al. Prediction of risk of seizure recurrence after a single seizure and early epilepsy: further results from the MESS trial. Lancet Neurol 2006; 5:317.
[462] Marson A, Jacoby A, Johnson A, et al. Immediate versus deferred antiepileptic drug treatment for early epilepsy and single seizures: a randomised controlled trial. Lancet 2005; 365:2007.
[463] Randomized clinical trial on the efficacy of antiepileptic drugs in reducing the risk of relapse after a first unprovoked tonic-clonic seizure. First Seizure Trial Group (FIR.S.T. Group). Neurology 1993; 43:478.
[464] Hauser WA, Rich SS, Lee JR, et al. Risk of recurrent seizures after two unprovoked seizures. N Engl J Med 1998; 338:429.
[465] Berg AT. Risk of recurrence after a first unprovoked seizure. Epilepsia 2008; 49 Suppl 1:13.
[466] Sirven JI, Evaluation and management of drug-resistant epilepsy. UpToDate – last updated Aug 28, 2014. Accessed March 5, 2015.

In principle, there is no distinction between dose reduction and cessation of treatment; cessation represents a reduction of the dose to zero. If the AED dose is reduced from a previously effective level, a new period of observation is required to ensure that the individual remains seizure-free.

Treatment with AEDs is seldom discontinued on the basis that the patient is considered "cured". More commonly, dose reduction or cessation is undertaken due to adverse effects, patient preference to discontinue medication, or the passage of a prolonged interval since the last seizure.

22.7.1.8 SELFLIMITED FOCAL EPILEPSIES OF CHILDHOOD

Reviewed 2025-12-10

Self-limited (formerly benign) focal epilepsies of childhood are electroclinical syndromes of suspected or proven genetic cause that occur in developmentally and neurologically normal children and have a favourable course, remitting before adulthood [467].

The natural history of **Self-limited epilepsy with centrotemporal spikes** (SeLECTS*, formerly known as Benign Rolandic Epiepsy (BRE) or Benign Childhood Epilepsy with Centrotemporal Spikes (BCECTS)*) is favorable. Treated or not, this syndrome has an excellent prognosis, with spontaneous remission in the majority of patients before age 12 to 13 years [468] [469] [470]. In adulthood such individuals should be regarded as not having epilepsy.

The clinical course of **Self-limited epilepsy with autonomic seizures** (SeLEAS, *formerly Panayiotopoulos syndrome or Benign Childhood Occipital Epilepsy*) is usually favorable. Seizures are infrequent, and almost half of patients have just a single seizure [471] [472] [473] [474]. Spontaneous remission usually occurs within two to three years from onset. A few children develop drug-resistant seizures or neuropsychologic deficits [475] [476]. Preexisting neurobehavioral disorders may be a risk factor for recurrent, more difficult to treat seizures [477]. Only rarely (almost never) do they experience epilepsy in adulthood and the diagnosis should usually be disregarded in medical selection of seafarers. Specialist advice is necessary.

The course of **Childhood occipital visual epilepsy** (COVE) Is less consistently benign than the SeLECTS and SeLEAS described above. Seizures may persist into adulthood, but remit beforehand in two-thirds

[467] Benbadis SR et al. Self-limited focal epilepsies of childhood. Uptodate litterature review through No. 2025. Visited 10 Dec. 2025. https://www.uptodate.com/contents/self-limited-focal-epilepsies-of-childhood?search=self-limited%20focal%20epilepsies%20of%20childhood&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1
[468] Bouma PA, Bovenkerk AC, Westendorp RG, Brouwer OF. The course of benign partial epilepsy of childhood with centrotemporal spikes: a meta-analysis. Neurology 1997; 48:430.
[469] Peters JM, Camfield CS, Camfield PR. Population study of benign rolandic epilepsy: is treatment needed? Neurology 2001; 57:537.
[470] Loiseau P, Duché B, Cordova S, et al. Prognosis of benign childhood epilepsy with centrotemporal spikes: a follow-up study of 168 patients. Epilepsia 1988; 29:229.
[471] Caraballo R, Cersósimo R, Fejerman N. Panayiotopoulos syndrome: a prospective study of 192 patients. Epilepsia 2007; 48:1054.
[472] Michael M, Tsatsou K, Ferrie CD. Panayiotopoulos syndrome: an important childhood autonomic epilepsy to be differentiated from occipital epilepsy and acute non-epileptic disorders. Brain Dev 2010; 32:4.
[473] Specchio N, Trivisano M, Di Ciommo V, et al. Panayiotopoulos syndrome: a clinical, EEG, and neuropsychological study of 93 consecutive patients. Epilepsia 2010; 51:2098.
[474] Lada C, Skiadas K, Theodorou V, et al. A study of 43 patients with panayiotopoulos syndrome, a common and benign childhood seizure susceptibility. Epilepsia 2003; 44:81.
[475] Caraballo R, Cersósimo R, Fejerman N. Panayiotopoulos syndrome: a prospective study of 192 patients. Epilepsia 2007; 48:1054.
[476] Oguni H, Hayashi K, Funatsuka M, Osawa M. Study on early-onset benign occipital seizure susceptibility syndrome. Pediatr Neurol 2001; 25:312.
[477] Hirano Y, Oguni H, Funatsuka M, et al. Neurobehavioral abnormalities may correlate with increased seizure burden in children with Panayiotopoulos syndrome. Pediatr Neurol 2009; 40:443.

of individuals [478] [479] [480]. Based on specialist advice, they may be considered as not having epilepsy anymore.

22.7.2 G43 - MIGRAINE

G43	Migraine (frequent attacks causing incapacity) Likelihood of disabling recurrences	P – Frequent attacks leading to impairment	R – As appropriate if capable of only limited duties	No incapacitating adverse effects while at sea. No incidents during previous periods of sea service

Reviewed 2025-12-16

Significance	Migraine is a prevalent neurological disorder affecting approximately 12% of the general population, with a higher incidence among females (up to 17%) compared to males (around 6%) [481]. The condition most commonly manifests between the ages of 30 and 39 and exhibits familial clustering [482]. Migraine without aura constitutes the majority of cases, accounting for roughly 75%. The condition is significant in the maritime context because migraine attacks can cause sudden incapacitation, impairing the ability to perform safety-critical tasks on board. This poses a potential risk to the health and safety of the affected individual, fellow crew members, passengers, and the safe operation of the vessel. Certain migraine subtypes—such as migraine with brainstem aura, hemiplegic migraine, retinal migraine, and chronic migraine—may present additional complexities and risks.
Possible medical incident(s)	Migraine attacks typically progress through several phases: **Prodromal phase:** Occurs in approximately 60% of sufferers, presenting 24–48 hours before headache onset with symptoms such as mood changes (euphoria, depression, irritability), food cravings, constipation, neck stiffness, and increased yawning. [483]. **Aura phase:** Experienced by about 25% of patients, involving focal neurological symptoms (usually visual but may include sensory, verbal, or motor disturbances) [484]. Aura symptoms develop in a characteristic pattern distinct from stroke or transient ischaemic attack [485].

[478] Caraballo R, Koutroumanidis M, Panayiotopoulos CP, Fejerman N. Idiopathic childhood occipital epilepsy of Gastaut: a review and differentiation from migraine and other epilepsies. J Child Neurol 2009; 24:1536.
[479] Gastaut H. A new type of epilepsy: benign partial epilepsy of childhood with occipital spike-waves. Clin Electroencephalogr 1982; 13:13.
[480] Panayiotopoulos CP. Elementary visual hallucinations, blindness, and headache in idiopathic occipital epilepsy: differentiation from migraine. J Neurol Neurosurg Psychiatry 1999; 66:536.
[481] Lipton RB, Stewart WF, Diamond S, Diamond ML, Reed M: Prevalence and burden of migraine in the United States: data from the American Migraine Study II. Headache. 2001;41(7):646
[482] Stewart WF, Schechter A, Rasmussen BK: Migraine Prevalence. Areview of population-based studies. Neurology. 1994;44(6 Suppl 4):S17 og Lipton RB, Bigal ME, Diamond M, Freitag F, Reed ML, Stewart WF, AMPP Advisory Group: Migraine Prevalence, disease burden, and the need for preventive therapy. Neurology. 2007:68(5):343
[483] Kelman L: The premonitory symptoms (prodrome): a tertiary care study of 893 migraineurs. Headache. 2004;44(9):865.
[484] Hansen JM, Lipton RB, Dodick DW, et al. Migraine headache is present in the aura phase: a prospective study. Neurology 2012; 79:2044.
[485] Cutrer FM, Huerter K: Migraine aura. Neurologist. 2007;13(3):118

	Headache phase: Characteristically unilateral and pulsating, often accompanied by nausea, vomiting, photophobia, and phonophobia [486] [487] [488] [489]. Attacks typically last from four hours to several days and frequently necessitate rest in a dark, quiet environment. During this phase, the individual is unable to perform any duties. **Postdromal phase**: Marked by transient headache pain triggered by sudden head movements and feelings of exhaustion or mild euphoria. Functional capacity remains impaired, limiting safe and effective work performance. **Chronic migraine** Chronic migraine, defined as headaches occurring on 15 or more days per month for over three months, may develop in approximately 3% of episodic migraine sufferers annually [490]. This condition may revert to episodic migraine in 26–70% of cases over time [491] [492]. **Treatment** The efficacy varies from individual to individual and with the migraine subtype. Observed effect is the only way to conclude that the treatment is sufficient. Regular daily lifestyle, regular meals, regular sleep, avoidance of dehydration and avoidance of precipitating factors are important parts of the treatment. Shipboard rhythm sometimes can make this difficult, and precipitate attacks.
General likelihood	**Frequency of attacks** The average frequency of migraine attacks is approximately three per year, though this varies widely—from isolated lifetime episodes to as many as 250 attacks annually [493]. tack frequency often declines after age 50, and hemiplegic migraine may evolve into more typical migraine without hemiparesis [494] [495]. While many attacks occur spontaneously, approximately 75% of individuals report identifiable triggers, including emotional stress, hormonal fluctuations (notably in women), fasting, weather changes, sleep disturbances, certain odors, neck pain, light exposure, alcohol, smoke, altered sleep patterns, heat, specific foods, exercise, and sexual activity. Obesity is associated with increased frequency and severity of attacks.
Consequences	**Individual:** Migraine attacks range from minor discomfort to severe incapacitation, rendering the individual unable to perform duties safely during episodes. **Crew:** The sudden incapacitation of a crew member, particularly one with safety-critical responsibilities, may compromise team function and safety.

[486] Charles A. The evolution of a migraine attack - a review of recent evidence. Headache 2013; 53:413.
[487] Silberstein SD. Migraine symptoms: results of a survey of self-reported migraineurs. Headache 1995; 35:387.
[488] Kelman L, Tanis D. The relationship between migraine pain and other associated symptoms. Cephalalgia 2006; 26:548.
[489] Wang YF, Fuh JL, Chen SP, et al. Clinical correlates and diagnostic utility of osmophobia in migraine. Cephalalgia 2012; 32:1180.
[490] Bigal, ME, Serrano D, Buse D, et al. Acute migraine medications and evolution from episodic to chronic migraine: a longitudinal populationa-based study. Headache 2008; 48:1157.
[491] Seok JI, Cho HI, Chung CS. From trhansformed migraine to episodic migraine: reversion factors. Headache 2006: 46:1186.
[492] Manack A, Buse DC, Serrano D, et al. Rates, predictors and consequences of remission from chronic migraine to episodic migraine. Neurology 2011; 76:711.
[493] Terwindt G, Kors E, Haan J, et al: Mutation analysis of the CACNA1A calcium channel subunit gene in 27 patients with sporadic hemiplegic migraine. Arch Neurol 2002; 59:1016.
[494] Ducros A, Denier C, Joutel A, et al. The clinical spectrum of familial hemiplecig migraine associated with mutations in a neuronal calcium channel. N Engl J Med 2001; 345:17.
[495] Bradshaw P, Parsons M. Hemiplegic Migraine, a clinical study. Q J Med 1965; 34:65.

	Ship: Operational safety may be jeopardised, especially during critical tasks such as bridge watchkeeping or emergency response, particularly in conditions of low manning or lone watchkeeping.
Unmitigated risk	The unmitigated risk is considered unacceptable if no measures are in place to manage or reduce the frequency and severity of attacks, given the potential for sudden incapacitation during safety-critical duties. This risk assessment applies separately to the individual's health and safety, the safety of the crew, and the safe operation of the ship.
Mitigation	Mitigating measures include: • Medical management with appropriate pharmacological treatment tailored to the individual and migraine subtype. • Lifestyle modifications such as maintaining regular sleep patterns, meals, hydration, and avoidance of known triggers. • Restrictions on duties or positions, particularly limiting safety-critical roles during periods of frequent or severe attacks. • Time-limited medical certificates with periodic reassessment (maximum validity two years). • Restrictions on sailing areas or conditions may be considered if relevant. • Referral for specialist neurological assessment if indicated. Where mitigating measures are insufficient or unavailable, cases may be referred to the appellate body for consideration of exemptions or further restrictions.
Mitigated risk	Following implementation of appropriate mitigation, the risk may be reduced to an acceptable level for the individual, crew, and ship operations. This may allow the seafarer to continue service with limitations on duties, position, or sailing area, subject to periodic medical review. If the mitigated risk remains unacceptable, a temporary declaration of unfitness may be warranted pending potential improvement within two years. Permanent unfitness is indicated if no improvement is expected.
Recommendation	Migraine attacks typically render the affected individual incapable of performing duties safely, posing a significant risk during safety-critical tasks such as bridge watchkeeping or emergency operations. The risk assessment must consider the ship's manning levels, the seafarer's specific role, and the availability of suitably trained personnel to cover duties during incapacitation. Regular medical review and adherence to mitigation strategies are essential to manage risk effectively. Specialist neurological advice should be sought for complex or refractory cases. Documentation should be prepared carefully if referral to the appellate body is necessary.

22.7.3 G47 - SLEEP-APNOEA

G 47	Sleep apnoea Fatigue and episodes of sleep while working.	T – Until treatment started and successful for three months. P – Treatment unsuccessful or not being complied with	L – Once treatment demonstrably working effectively for three months, including compliance with CPAP (continuous positive airway pressure) machine use confirmed. Six-monthly assessments of compliance based on CPAP machine recording	Case-by-case assessment based on job and emergency requirements, informed by specialist advice.

Reviewed 2025-12-11

Significance	Sleep apnoea is a common, chronic condition. Prevalence estimates range from 15–30% in males and 5–15% in females in North America, depending on diagnostic criteria [496]. Figures for Norway are somewhat lower, approximately 10–20% in males and 3–10% in females [497]. Common risk factors include obesity, male gender, advancing age and upper airway soft tissue abnormalities. Other factors include smoking, medical conditions e.g. congestive cardiac failure, chronic lung disease, acromegaly and hypothyroidism. Risk factors include obesity, male sex, advancing age, and upper airway soft-tissue abnormalities. Additional contributors include smoking and medical conditions such as congestive cardiac failure, chronic lung disease, acromegaly, and hypothyroidism. Prevalence also varies with race and ethnicity, with higher rates reported among African American and Asian populations compared with Caucasians of similar age and body mass index. Patients most commonly report snoring and daytime sleepiness, although these are non-specific. Nocturnal choking or gasping is considered the most useful diagnostic symptom [498]. Other features may include restless sleep, periods of silence terminated by loud snoring, fatigue, poor concentration, nocturnal angina, nocturia, and morning headaches.
Possible medical incident(s)	• Decreased daytime alertness and excessive sleepiness. • Impaired attention, concentration, and cognitive performance. • Increased likelihood of errors and accidents in safety-critical tasks. • Elevated risk of motor vehicle crashes (two to three times higher than in the general population). • Cardiovascular morbidities, including: • Hypertension • Coronary artery disease

[496] Young T, Palta M, Dempsey J, Peppard PE, Nieto FJ, Hla KM, Burden of sleep apnea: rationale, design, and major findings of the Wisconsin Sleep Cohort study. WMJ. 2009;108(5):246
[497] https://nhi.no/livsstil/egenomsorg/sovnapne-syndrom/ Besøkt 2020-06-03.
[498] Myers KA, Mrkobrada M, Simel DL; Does this patient have obstructive sleep apnea?: The Rational Clinical Examination systematic review. JAMA. 2013 Aug;310(7):731-41

	• Cardiac arrhythmias • Heart failure • Stroke • Overall increase in morbidity and mortality comparable to cardiovascular sequelae [499]. • Potential exacerbation of fatigue and inattention leading to impaired daily function.
Likelihood	No precise annual incidence figures are available for untreated individuals. Likelihood must therefore be assessed individually, based on disease severity. Severity is graded using the Apnoea-Hypopnoea Index (AHI): • Mild: 5–15 respiratory events per hour of sleep • Moderate: 15–30 events per hour • Severe: >30 events per hour
Consequences	**Individual:** Excessive daytime sleepiness leading to impaired vigilance and reduced capacity to perform duties. Increased risk of cardiovascular events (e.g. myocardial infarction, stroke) with potential for sudden incapacity. Cognitive impairment affecting decision-making, memory, and reaction time. Reduced quality of life and increased risk of depression, which may affect compliance with treatment. **Crew:** Heightened risk of accidents due to lapses in attention or microsleeps during safety-critical tasks. Reduced reliability in team operations, particularly during emergency response or watchkeeping. Potential disruption of crew cohesion if colleagues must compensate for impaired performance. **Ship:** Increased likelihood of navigational errors if the affected individual serves on the bridge or in watchkeeping roles. Elevated risk of mechanical or operational failures if the individual works in the engine department and experiences fatigue-related errors. Compromised safety in deck operations, including cargo handling and emergency drills, due to impaired alertness or sudden incapacitation. Overall reduction in operational safety margins, particularly in high-risk environments such as port manoeuvres, helicopter transfers, or adverse weather conditions.
Mitigation	Weight reduction and CPAP therapy are the principal interventions. Patients should avoid alcohol and sedative medications such as benzodiazepines. Weight loss, although rarely curative, improves overall health, reduces AHI, and decreases daytime sleepiness [500].

[499] George CF; Sleep apnea, alertness, and motor vehicle crashes. Am J Respir Crit Care Med. 2007;176(10):954
[500] Smith PL, Gold AR, Meyers DA, Haponik EF, Bleecker ER; Weight loss in mildly to moderately obese patients with obstructive sleep apnea: Ann Intern Med. 1985;103(6 (Pt 1)):850

	CPAP therapy has demonstrated beneficial effects across symptoms and disease severity. A meta-analysis of 22 randomised trials (1,160 patients) showed significant improvements in subjective and objective sleepiness, quality of life, cognitive function, and depression [501]. Once treatment demonstrably working effectively for three months, including compliance with CPAP (continuous positive airway pressure) machine use confirmed. **Time limitations:** Issue time-limited certificates (e.g. 6–12 months) to ensure regular reassessment of compliance and treatment efficacy. **Duty restrictions:** Restrict from safety-critical roles (e.g. bridge watchkeeping, engine room duty) until stability is demonstrated. **Trade area restrictions:** Limit service to coastal or short-sea voyages rather than long-haul or remote areas, where medical evacuation is more difficult. **Enhanced monitoring:** Require periodic specialist reports (e.g. CPAP compliance downloads, sleep clinic assessments). **Lifestyle interventions:** Mandate weight management programmes, smoking cessation, or alcohol avoidance as part of certification conditions. **Crew education:** Provide guidance to supervisors and colleagues on recognising early signs of fatigue or sleepiness, enabling timely intervention.
Risk assessment	**Individual:** • With effective CPAP therapy and confirmed compliance, excessive daytime sleepiness is significantly reduced. • Cardiovascular risks are lowered, decreasing the likelihood of sudden incapacitation. • Cognitive performance, concentration, and mood improve, supporting safe fulfilment of duties. • Regular specialists follow-up ensures early detection of relapse or non-compliance. • Overall, the risk becomes **acceptable**, provided treatment is maintained and monitored. **Crew:** • Reduced likelihood of errors or lapses in attention during team operations. • Greater reliability in emergency response and safety-critical tasks. • Less need for colleagues to compensate for impaired performance, improving crew cohesion. • Risk becomes **acceptable**, though restrictions may apply to certain roles until long-term stability is demonstrated. **Ship:** • Lower probability of navigational errors or mechanical mishaps due to improved vigilance.

[501] Giles TL, Lasserson TJ, Smith BJ, White J, Wright J, Cates CJ; Continuous positive airways pressure for obstructive sleep apnoea in adults: Cochrane Database Syst Rev. 2006

	• Reduced risk of operational disruption during critical manoeuvres or adverse conditions. • Safety margins are restored, particularly if certificate limitations (time-bound validity, restricted sailing area) are applied. • Risk becomes **acceptable**, though conditional on compliance monitoring and appropriate certificate restrictions.

22.7.4 G47 - NARCOLEPSY

G 47	Narcolepsy Fatigue and episodes of sleep whilst working	T – Until controlled by treatment for at least two years P – Treatment unsuccessful or not being complied with	R, L – Near coastal waters and no watchkeeping duties, if specialist confirms full control of symptoms for at least two years. Annual review	Not applicable

Reviewed 2026-01-05

Significance	Narcolepsy is a chronic neurological disorder characterised by excessive daytime sleepiness, often accompanied by cataplexy, hypnagogic hallucinations, and sleep paralysis, although only approximately one third of patients exhibit all four symptoms. **Narcolepsy type 1** (with cataplexy) has an estimated prevalence of 25 to 50 per 100,000 individuals and an incidence of approximately 0.74 per 100,000 person-years [502]. It affects males and females equally and typically presents during adolescence or early adulthood, though onset can occur as early as five years of age or as late as beyond forty years. **Narcolepsy type 2** (without cataplexy) is less well characterised, with an estimated prevalence of 20 to 34 per 100,000, though data remain limited [503] [504]. The condition is significant in the maritime context due to the risk of sudden sleep episodes and associated symptoms that may impair the ability to perform safety-critical tasks, thereby posing a risk to the individual, other crew members, and the safe operation of the ship.
Possible medical incident(s)	Narcolepsy manifests with chronic fatigue, impaired cognitive function including poor memory and concentration, and episodes of sudden sleep (sleep attacks) which may occur unpredictably during work. Additional features include slurred speech, blurred vision, irregular breathing patterns, and increased risk of accidents.

[502] Longstreth WT Jr, Koepsell TD, Ton TG, Hendrickson AF, van Belle G; The epidemiology of narcolepsy. Sleep. 2007;30(1):13
[503] Silber MH, Krahn LE, Olson EJ, Pankratz VS. The epidemiology of narcolepsy in Olmsted County, Minnesota: a population-based study. Sleep 2002; 25:197.
[504] Shin YK, Yoon IY, Han EK, et al. Prevalence of narcolepsy-cataplexy in Korean adolescents. Acta Neurol Scand 2008; 117:273.

	Non-pharmacological management includes lifestyle modifications and strict sleep hygiene measures but is rarely sufficient as sole therapy. The majority requires pharmacological treatment.
Likelihood	Sleepiness All individuals with narcolepsy experience chronic excessive daytime sleepiness, although total sleep duration over 24 hours is comparable to that of healthy individuals [505] [506]. Patients are prone to involuntary sleep episodes, often with minimal warning, commonly referred to as "sleep attacks." These episodes can occur at inappropriate times, including during work. Sleepiness typically improves temporarily following brief naps, and patients generally feel refreshed upon waking in the morning. Patients with narcolepsy commonly score above 15 on the Epworth Sleepiness Scale, indicating severe daytime sleepiness [507]. **Cataplexy,** characterised by transient, emotionally triggered muscle weakness, occurs in approximately 60% of patients within three to five years of symptom onset. Triggers are usually strong positive emotions such as laughter or excitement [508], but may also include anger or grief. Cataplexy develops within three to five years of the onset of sleepiness in 60 percent of people with narcolepsy [509]. **Hypnagogic hallucinations** are vivid sensory experiences occurring at sleep onset and, while distressing, are less relevant to safety risk assessments. **Sleep paralysis,** the temporary inability to move upon falling asleep or awakening, occurs more frequently in narcolepsy patients than in the general population (where it affects approximately 20% rarely). Sleep paralysis may be significant in emergency situations requiring rapid response.
Consequences	**Individual:** Symptoms range from minor inconvenience to severe impairment, with potential for sudden incapacitation. **Crew:** Sudden sleep episodes or cataplexy may compromise team safety and operational effectiveness. **Ship:** Safety-critical operations may be jeopardised, particularly during watchkeeping or emergency duties.
Unmitigated risk	Without effective treatment and management, the risk of sudden incapacitation due to sleep attacks or cataplexy is unacceptable, posing significant safety hazards to the individual, crew, and vessel operations.

[505] Broughton R, Dunham W, Newman J, et al. Ambulatory 24 hour sleep-wake monitoring in narcolepsy-cataplexy compared to matched controls. Electroencephalogr Clin Neurophysiol 1988; 70:473.
[506] Dantz B, Edgar DM, Dement WC. Circadian rhythms in narcolepsy: studies on a 90 minute day. Electroencephalogr Clin Neurophysiol 1994; 90:24.
[507] Epworth Sleepiness Scale (ESS) in adults: 1-6 points Normal sleep. 7-8 points Average sleepiness. 9-24 points Abnormal (possibly pathologic) sleepiness. https://www.uptodate.com/contents/calculator-epworth-sleepiness-scale-ess-in-adults?search=narcolepsy&topicRef=7689&source=see_link visited 2020-06-03.

[508] Overeem S, van Nues SJ, van der Zande WL, et al. The clinical features of cataplexy: a questionnaire study in narcolepsy patients with and without hypocretin-1 deficiency. Sleep Med 2011; 12:12.
[509] Okun ML, Lin L, Pelin Z, et al. Clinical aspects of narcolepsy-cataplexy across ethnic groups. Sleep 2002; 25:27.

Mitigation	Pharmacological treatment aims to reduce excessive daytime sleepiness and control cataplexy [510]. Psychosocial support and regular specialist follow-up every 6 to 12 months are essential. Residual sleepiness is monitored using objective measures such as the Multiple Sleep Latency Test [511] or Maintenance of Wakefulness Test. Despite treatment, daytime alertness rarely normalises completely [512].

22.7.5 G00-99 - OTHER ORGANIC NEUROLOGICAL DISEASE

G 00-99	Other organic nervous disease, e.g. multiple sclerosis, Parkinson's disease. Recurrence/progression. Limitations on muscular power, balance, coordination and mobility	T – Until diagnosed and stable P – If limitations affect ability to reliably perform work safely and effectively or unable to meet physical capability requirements (C – Physical capability requirements)	R, L – Case-by-case assessment based on job and emergency requirements, informed by specialist advice	Case-by-case assessment based on job and emergency requirements, informed by specialist advice

22.7.5.1 G35 - MULTIPLE SCLEROSIS

Reviewed 2026-01-05

Significance	Multiple sclerosis (MS) is a chronic inflammatory demyelinating disease of the central nervous system characterised by a variety of clinical presentations and disease courses. No single clinical finding is pathognomonic for MS, but many are highly characteristic. Several disease patterns are recognised: **Clinically isolated syndrome (CIS)** This represents the first clinical episode suggestive of MS, such as optic neuritis, brainstem syndromes, or transverse myelitis, demonstrating inflammatory demyelination but not yet fulfilling diagnostic criteria for MS [513]. Patients with CIS and baseline MRI lesions have a long-term (≥10 years) risk of developing MS of ≥60%, whereas those with a normal baseline MRI have an approximate 20% risk [514]. **Relapsing-Remitting (RRMS)** Characterised by clearly defined relapses followed by full or partial recovery, with no progression between relapses. RRMS accounts for approximately 85–90% of cases at onset[515]. The most common clinical presentation is a spinal cord syndrome with spastic paraparesis without a clear sensory level. Most patients with RRMS eventually transition to secondary progressive MS.

[510] Wise MS,Arand DL, Auger RR et el; American Academy of Sleep Medicine:Treatment of narcolepsy and other hypersomnias of central origin:Sleep 2007;30:172-1727.
[511] Arnand D, Bonnet M, Hurwitz T et al; The clinical use of the MSLT and MWT:Sleep. 2005;28:123-144
[512] Miller MM, Hajdukovic R, Erman MK; Treatment of narcolepsy with methamphetamine: Sleep.1993;16:306-317.
[513] Lublin FD, Reingold SC, Cohen JA, et al. Defining the clinical course of multiple sclerosis: the 2013 revisions. Neurology 2014; 83:278.
[514] Olek MJ. Clinically isolated syndromes suggestive of multiple sclerosis. UpToDate, last updated Dec 11, 2014. Accessed March 6 2015.
[515] Weinshenker BG. Natural history of multiple sclerosis. Ann Neurol 1994; 36 Suppl:S6.

	Secondary progressive (SPMS) Following an initial RRMS course, SPMS is marked by gradual neurological deterioration with or without occasional relapses, minor remissions, and plateaus. Transition typically occurs 10–20 years after onset, though diagnosis is retrospective and lacks definitive criteria[516]. Median time from first symptoms to SPMS is approximately 19 years; from MS diagnosis to SPMS, about 12 years [517]. **Primary progressive (PPMS)** Characterised by steady progression of disability from onset, with occasional plateaus or minor improvements. PPMS accounts for about 10% of MS cases at onset[518]. Clinical presentation often involves a spinal cord syndrome with spastic paraparesis and no clear sensory level [519]. PPMS has a more balanced sex distribution, later age of onset, and generally worse prognosis compared to RRMS.
Possible medical incident(s)	Disability progression in MS is highly variable [520], but generally slow [521] [522] [523] [524] [525] [526]. A large longitudinal study of 2,319 patients over 22,723 patient-years reported[527] [528]: • Median time from disease onset to Expanded Disability Status Scale (EDSS) 6 (requiring a cane for walking) was 27.9 years; median age at EDSS 6 was 59 years. • Primary progressive disease course was associated with faster progression (hazard ratio [HR] 2.90 from onset). • Men progressed more rapidly than women from onset but reached EDSS 6 at similar ages. • Initial symptom type did not predict progression after adjustment for other factors. • Younger age at onset correlated with slower progression, though older onset patients were older at progression milestones. Similar results were found in a large epidemiology study from France [529].

[516] Lublin FD, Reingold SC, Cohen JA, et al. Defining the clinical course of multiple sclerosis: the 2013 revisions. Neurology 2014; 83:278.
[517] Eriksson M, Andersen O, Runmarker B. Long-term follow up of patients with clinically isolated syndromes, relapsing-remitting and secondary progressive multiple sclerosis. Mult Scler 2003; 9:260.
[518] Koch M, Kingwell E, Rieckmann P, Tremlett H. The natural history of primary progressive multiple sclerosis. Neurology 2009; 73:1996.
[519] Rice CM, Cottrell D, Wilkins A, Scolding NJ. Primary progressive multiple sclerosis: progress and challenges. J Neurol Neurosurg Psychiatry 2013; 84:1100.
[520] Scalfari A, Neuhaus A, Daumer M, et al. Early relapses, onset of progression, and late outcome in multiple sclerosis. JAMA Neurol 2013; 70:214.
[521] Koch M, Kingwell E, Rieckmann P, Tremlett H. The natural history of primary progressive multiple sclerosis. Neurology 2009; 73:1996.
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[529] Confavreux C, Vukusic S. Age at disability milestones in multiple sclerosis. Brain 2006; 129:595.

	Earlier studies suggested more rapid progression; for example, a 25-year follow-up found 50% reached EDSS 6 within 16 years [530].
Likelihood	Relapse frequency varies widely, averaging 0.4 to 0.6 relapses per year. Relapses are more frequent early in the disease and decline over time. High relapse frequency in the first 2–5 years may increase risk of secondary progression and disability [531]. Some data suggest that a high relapse frequency in the first two to five years following the diagnosis of MS is associated with increased risk of secondary progression and disability [532] [533] [534]. In a single center study that analyzed data from 2587 relapses occurring in 1078 patients during an average follow-up of 7.4 years, relapses causing permanent disability were rare [535]. Relapses were not associated with starting or stopping interferon treatment. Relapses of MS may be more common after stressful life events [536] [537] [538]. Perhaps the strongest evidence comes from a meta-analysis of 14 observational studies that found a significant association between stress and MS exacerbations [539]. The authors cautioned that the study does not offer absolute evidence of a causal association. Prognostic indicators exist but are not reliably predictive for individual outcomes [540].
Consequences	**Individual:** Disability ranges from minor to severe, potentially impairing physical and cognitive function. **Crew:** Progressive disability may limit ability to perform safety-critical tasks reliably. **Ship:** Operational safety may be compromised depending on the severity and progression of disability.
Unmitigated risk	Without treatment or management, the risk of progressive disability and relapse-related impairment is significant, potentially rendering the seafarer unable to meet physical capability requirements or perform duties safely.

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[540] Swanton J, Fernando K, Miller D. Early prognosis of multiple sclerosis. Handb Clin Neurol 2014; 122:371.

Mitigation	Acute relapses are treated with glucocorticoids to improve short-term outcomes but without proven long-term benefit on disease progression. Disease-modifying therapies (DMTs) reduce relapse frequency in RRMS but have uncertain effects on long-term disability. No DMTs are definitively effective for progressive MS forms, though some treatments show modest benefit in SPMS. Specialist neurological assessment and tailored management plans are essential. Fitness for service and work restrictions should be assessed on a case-by-case basis, considering job demands and emergency requirements. Operational risk assessments should consider the seafarer's condition and potential limitations, with contingency plans for emergency scenarios. Restrictions on watchkeeping, emergency response roles, or physically demanding tasks may be necessary. The ship's manning levels and redundancy of critical roles should be evaluated to ensure safe operations despite potential incapacitation.
Mitigated risk	**Individual:** With effective treatment and appropriate work restrictions, the risk of sudden incapacitation or progressive disability impacting safety is reduced to an acceptable level. The seafarer may continue service with limitations, subject to ongoing medical review. **Crew:** Mitigation measures reduce the burden on colleagues and maintain team functionality, thereby preserving overall crew safety and operational effectiveness. **Ship:** The risk to vessel safety and operational integrity is minimised through tailored restrictions, adequate manning, and emergency preparedness. Continuous monitoring and reassessment ensure that mitigated risk remains within acceptable bounds.

22.7.5.2 G20-22 - PARKINSONS DISEASE AND PARKINSONISM

Reviewed 2026-01-05

Significance	The cardinal motor symptoms of Parkinson's disease (PD) include tremor, bradykinesia, rigidity, and, in later stages, postural instability [541]. In addition to these motor features, PD is now widely recognised to encompass a broad spectrum of neuropsychiatric and non-motor manifestations that may significantly impact the safe and effective performance of work duties. These include [542] [543] [544] [545] [546]: • Cognitive dysfunction and dementia • Psychosis and hallucinations • Mood disorders including depression, anxiety, and apathy/abulia • Sleep disturbances • Fatigue • Autonomic dysfunction • Olfactory dysfunction • Gastrointestinal dysfunction • Pain and sensory disturbances • Dermatologic findings¨
Possible medical incident(s)	Potential incidents include • impaired judgement, • delayed or inappropriate responses during work, • failure to maintain balance, • difficulties with mobility, and • reduced performance attributable to both motor and non-motor symptoms of Parkinson's disease.
Likelihood	Depending on condition. Needs to be assessed on an individual level. From very low to high. Three major clinical subtypes of PD have been described, based on the predominant feature [547] [548] [549]: • Tremor-dominant • Akinetic-rigid • Postural instability and gait difficulty.

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[546] Fasano A, Visanji NP, Liu LW, et al. Gastrointestinal dysfunction in Parkinson's disease. Lancet Neurol 2015; 14:625.
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[548] Thenganatt MA, Jankovic J. Parkinson disease subtypes. JAMA Neurol 2014; 71:499.
[549] Nutt JG. Motor subtype in Parkinson's disease: Different disorders or different stages of disease? Mov Disord 2016; 31:957.

	The tremor-dominant subtype is associated with slower progression and less neuropsychologic impairment than the other two groups [550] [551] [552] [553] [554] [555] [556]. While some clinicians may find these groupings useful, clinical PD progression is highly variable among individuals, and assignment of patients to subtypes can change as the disease progresses [557]. Thus, there are no symptoms or signs in idiopathic PD that allow a practitioner to accurately predict the future course of PD for any given individual. Individuals with prodromal or unrecognized Parkinson disease may have greater impairment in activities involving mobility and strength up to 3 years prior to diagnosis compared with the general population [558] [559]. It is important to note that non-motor symptoms may precede motor symptoms. Psychiatric manifestations, such as psychosis or dementia, often contribute more substantially to disability than motor symptoms and may present greater challenges in management. Dementia is a common feature of PD [560]. Cross-sectional studies suggest that the mean prevalence of dementia is 30 to 40 percent [561] [562]. One meta-analysis of prospective studies reported a 4.5 percent annual risk of dementia in patients with PD, a rate 3.25 times higher relative to the risk of dementia in individuals without PD [563]. Cumulative incidence rates of over 80 percent have been reported in patients followed for more than 20 years after onset of PD [564] [565] [566]. Thus, while the incidence is high, dementia is not inevitable in patients with PD.

[550] Zetusky WJ, Jankovic J, Pirozzolo FJ. The heterogeneity of Parkinson's disease: clinical and prognostic implications. Neurology 1985; 35:522.
[551] Jankovic J, McDermott M, Carter J, et al. Variable expression of Parkinson's disease: a base-line analysis of the DATATOP cohort. The Parkinson Study Group. Neurology 1990; 40:1529.
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[564] Aarsland D, Andersen K, Larsen JP, et al. Prevalence and characteristics of dementia in Parkinson disease: an 8-year prospective study. Arch Neurol 2003; 60:387.
[565] Hely MA, Reid WG, Adena MA, et al. The Sydney multicenter study of Parkinson's disease: the inevitability of dementia at 20 years. Mov Disord 2008; 23:837.
[566] Gallagher J, Gochanour C, Caspell-Garcia C, et al. Long-Term Dementia Risk in Parkinson Disease. Neurology 2024; 103:e209699.

	Milder degrees of cognitive impairment are also common in patients with PD, particularly early in the disease course [567] [568] [569] [570]. In studies of patients with a new diagnosis of PD, the prevalence of mild cognitive impairment (MCI) ranges from approximately 10 to 35 percent [571] [572] [573] [574].
Consequences	**Individual:** Consequences range from minor impairment to severe disability. **Crew:** The impact on crew safety and operational effectiveness may vary from minor to serious. **Ship:** The safe operation of the vessel may be compromised to varying degrees depending on the severity of symptoms.
Unmitigated risk	**Individual:** Without effective treatment or management, the individual is at significant risk of progressive motor and non-motor disability, which may lead to sudden or gradual inability to perform duties safely and effectively. **Crew:** The absence of mitigation increases the risk of impaired team performance, increased workload on other crew members, and potential safety hazards due to the affected seafarer's compromised functional capacity. **Ship:** Operational safety may be seriously jeopardised if the seafarer's impairments are unaddressed, particularly during emergency situations or safety-critical tasks, increasing the risk of accidents or incidents on board.
Mitigation	The potential for sustained functional improvement is greatest in the early stages of Parkinson's disease. However, individual responses to treatment vary considerably. Functional capacity should be assessed both on and off medication by a specialist neurologist prior to certification decisions. Workplace adjustments, duty restrictions, and regular medical monitoring are essential to reduce risk. Psychosocial support and cognitive assessments should be incorporated into ongoing care.
Mitigated risk	**Individual:** Risk ranges from acceptable to unacceptable depending on symptom control and functional status. **Crew:** Risk similarly varies from acceptable to unacceptable, influenced by the individual's ability to perform duties safely. **Ship:** Operational risk must be evaluated in the context of the individual's limitations and the ship's manning and emergency preparedness.

[567] Louis ED, Schupf N, Manly J, et al. Association between mild parkinsonian signs and mild cognitive impairment in a community. Neurology 2005; 64:1157.
[568] Muslimovic D, Post B, Speelman JD, Schmand B. Cognitive profile of patients with newly diagnosed Parkinson disease. Neurology 2005; 65:1239.
[569] Foltynie T, Brayne CE, Robbins TW, Barker RA. The cognitive ability of an incident cohort of Parkinson's patients in the UK. The CamPaIGN study. Brain 2004; 127:550.
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[572] Muslimovic D, Post B, Speelman JD, Schmand B. Cognitive profile of patients with newly diagnosed Parkinson disease. Neurology 2005; 65:1239.
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[574] Weintraub D, Simuni T, Caspell-Garcia C, et al. Cognitive performance and neuropsychiatric symptoms in early, untreated Parkinson's disease. Mov Disord 2015; 30:919.

Recommendation	A comprehensive specialist report from a neurologist is essential. This should include an evaluation of cognitive function, preferably supplemented by a neuropsychological assessment, to inform the fitness-for-service determination.

22.7.6 R55 - SYNCOPE AND OTHER DISTURBANCES OF CONCSIOUSNESS

R 55	Syncope and other disturbances of consciousness Recurrence causing injury or loss of control	T – Until investigated to determine cause and to demonstrate control of any underlying condition		
	a) simple faint;	P – If recurrent incidents persist despite full investigation and appropriate treatment		Simple faint; if no new events
	b) not a simple faint, unexplained disturbance; not recurrent and without any detected underlying cardiac, metabolic or neurological cause	T – Four weeks P – If recurrent incidents persist despite full investigation and appropriate treatment	R, L – Case-by-case decision, near-coastal waters with no lone watchkeeping	Three months after event if no recurrences
	c) syncope with recurrent or with possible underlying cardiac, metabolic or neurological cause	T – With possible underlying cause that is not identified or treatable; for six months after event if no recurrences T – With possible underlying cause or cause found and successfully treated; for one month after successful treatment P – For all of above if recurrent incidents persist despite full investigation and appropriate treatment	R, L – Case-by-case assessment, near-coastal waters with no lone watchkeeping	With possible underlying cause but no treatable cause found; one year after event if no recurrences With possible underlying cause found and treated; three months after successful treatment
	d) disturbance of consciousness with features indicating an epileptic seizure. Go to G40-41	P – For all of above if recurrent incidents persist despite full investigation and appropriate treatment		With seizure markers – not applicable

Reviewed 2026-01-05

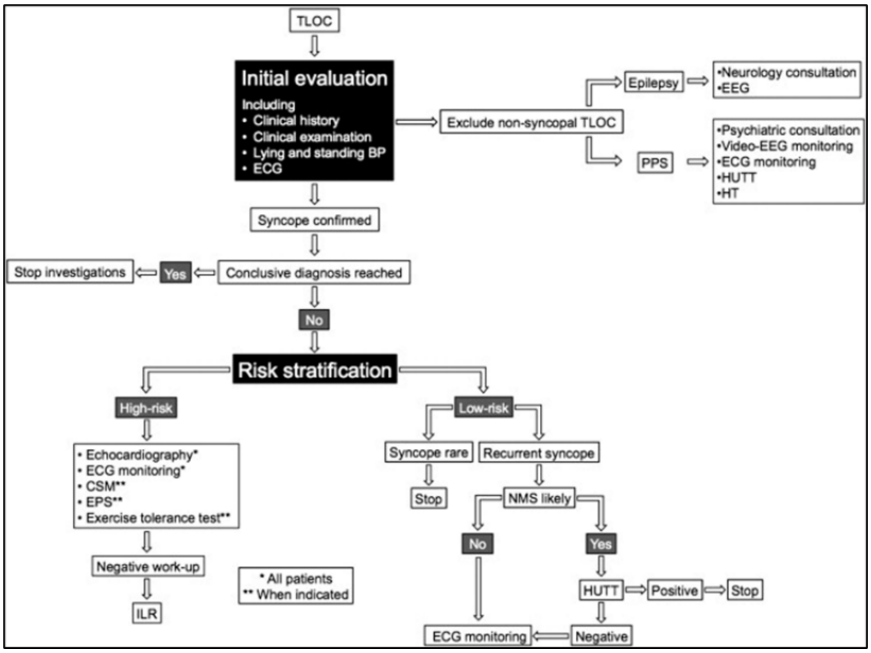
Significance	Syncope and other disturbances of consciousness encompass transient loss of consciousness (TLOC) characterised by abrupt onset and loss of postural tone. Syncope is generally benign and self-limiting; however, it may be a manifestation of serious underlying pathology. Approximately one-third of syncope episodes result in trauma, and recurrent episodes can impose a significant psychological burden. Syncope is a critical condition to assess in the maritime environment due to its potential to impair a seafarer's ability to perform duties safely and effectively.

Loss of consciousness may lead to injury to the individual or others, compromise safety-critical tasks, and jeopardise the safe operation of the vessel.

It is essential to exclude or identify underlying causes, which may include reflex-mediated syncope (vasovagal, situational, carotid sinus syndrome), orthostatic hypotension (medication-induced, volume depletion, autonomic failure), and cardiac causes (arrhythmias, structural heart disease, cardiopulmonary or vascular disorders).

Insufficient evaluation necessitates a conservative 'worst-case' approach in medical fitness decisions.

The diagnostic process after syncope involves many possible causes and hence, examinations and tests. The following algorithm from Mereu, Sau & Lim, published in Autonomic Neuroscience in 2014, may be useful[575].



Algorithm for the diagnostic management of syncope.
TLOC: transient loss of consciousness, HT: hyperventilation test, HUTT: head-up tilt test, EPS: electrophysiological study, CSM: carotid sinus massage, NMS: neurally mediated syncope, ILR: implanted loop recorder, EEG: electroencephalography.
Mereu R, Sau A, Lim PB. Diagnostic algorithm for syncope. Aut Neurosc 2014; 184:10-16.

A thorough investigation of the case is necessary to diagnose an underlying condition, if possible. The risk assessment should include the likelihood for a new episode. Cardiological and neurological investigation should usually be undertaken to establish – if possible – the underlying cause.

In the absence of an established underlying disease or when the cause is unknown, «worst-case» assessment should apply [576].

[575] Mereu R, Sau A, Lim PB. Diagnostic algorithm for syncope. Aut Neurosc 2014; 184:10-16
[576] Soteriades ES, Evans JC, Larson MG, Chen MH, Chen L, Benjamin EJ, Levy D: Incidence and prognosis of syncope. N Engl J Med. 2002;347(12):878.

	When an underlying cause is known, the risk assessment will be based on this knowledge. This happens to between 10 and 30 percent of the cases[577] [578].
Possible medical incident(s)	Recurrence of syncope episodes, potentially causing injury or loss of control. Medical incidents arising from undiagnosed or untreated underlying cardiac, metabolic, or neurological conditions. Psychological sequelae from recurrent syncope.
Likelihood	The likelihood of recurrence varies widely depending on the syncope subtype and underlying aetiology. Epidemiological data from a prospective study of 341 patients indicate the following distribution of causes [579]: • Reflex (neurally mediated, including vasovagal): 58% • Cardiac disease (primarily bradyarrhythmias or tachyarrhythmias): 23% • Neurological or psychiatric causes: 1% • Unexplained syncope: 18% (with other series reporting up to 41%) [580] Likelihood categories range from very low (<2% per year) to high (>10% per year), contingent on specialist evaluation and diagnostic findings.
Consequences	**Individual:** Consequences range from minor injury to serious harm, including trauma from falls or accidents during loss of consciousness. **Crew:** Potential risk to other crew members through impaired performance or accidents resulting from syncope episodes. **Ship:** Possible compromise of vessel safety and operational integrity, especially if the affected individual holds safety-critical duties.
Unmitigated risk	Depending on the individual risk assessment, if an underlying cause is identified, appropriately treated, and the likelihood of recurrence is low, the unmitigated risk may be considered acceptable. Conversely, if the cause remains unknown or there is a history of recurrent episodes, the unmitigated risk should be regarded as unacceptable.
Mitigation	Mitigating measures include: • Comprehensive diagnostic evaluation to identify and treat underlying causes, including cardiological and neurological investigations. • Appropriate medical treatment tailored to the identified cause (e.g., pacemaker implantation for bradyarrhythmias, medication adjustment). • Avoidance of precipitating factors (e.g., dehydration, prolonged standing, certain medications). • Imposition of work restrictions, including Restriction of duties, watchkeeping responsibilities, or sailing areas, as authorised by the seafarer's medical practitioner in accordance with the Regulations and ILO/IMO Guidelines.

[577] Kenny RA, Brignole M, Dan GA, et al. Syncope Unit: rationale and requirement--the European Heart Rhythm Association position statement endorsed by the Heart Rhythm Society. Europace 2015; 17:1325.
[578] Brignole M, Moya A, de Lange FJ, et al. 2018 ESC Guidelines for the diagnosis and management of syncope. Eur Heart J 2018; 39:1883.
[579] Alboni P, Brignole M, Menozzi C, Raviele A, Del Rosso A, Dinelli M, Solano A, Bottoni N J Diagnostic value of history in patients with syncope with or without heart disease. Am Coll Cardiol. 2001;37(7):1921.
[580] Kapoor WN. Evaluation and outcome of patients with syncope. Medicine (Baltimore) 1990; 69:160.

	• Temporary or permanent certificate restrictions or limitations as necessary.
Mitigated risk	Depending on the efficacy of the implemented mitigating measures, the individual risk assessment may conclude that the risk is either acceptable or unacceptable.
Recommendation	The assessment must be based on a thorough specialist evaluation to exclude or identify underlying causes. Cardiological and neurological investigations are generally required to establish diagnosis and guide risk stratification. In cases where no cause is identified, a conservative 'worst-case' risk assessment should be applied. Specialist advice is essential to determine likelihood and appropriate mitigation. Cases with recurrent syncope despite treatment or with complex underlying pathology should be referred to the appellate body for consideration of exemptions or special conditions. The diagnostic algorithm by Mereu, Sau & Lim (Autonomic Neuroscience, 2014) may be utilised to guide clinical evaluation.

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22.7.7 T90 – SEQUELAE FOLLOWING INTRACRANIAL SURGERY/INJURY

T 90	Intracranial surgery/injury, including treatment of vascular anomalies or serious head injury with brain damage. Harm to ship, others and self from seizures. Defects in cognitive, sensory or motor function. Recurrence or complication of underlying condition.	T – For one year or longer until seizure likelihood low based on advice from specialist P – Continuing impairment from underlying condition or injury or recurrent seizures	R – After at least one year, near coastal, no lone watchkeeping if seizure likelihoods low and no impairment from underlying condition or injury Conditional on continued compliance with any treatment and on periodic review, as recommended by specialist	No impairment from underlying condition or injury, not on any anti-epilepsy medications. Seizure likelihood very low. Conditional on continued compliance with any treatment and on periodic review, as recommended by specialist.

Reviewed 2025-12-17

Intracranial surgery and injury can result in a wide range of sequelae. Each case must be evaluated with thorough attention to the underlying condition, the nature and extent of the surgery or injury sustained, the medications required, and any ongoing symptoms. These symptoms may include, but are not limited to, seizure activity, cognitive function, physical capabilities, and emotional or psychological effects.

Despite an extensive review of the literature, it has not been possible to quantify the likelihood of subsequent medical incidents in this population. Consequently, individual specialist assessment is essential to inform an accurate risk evaluation and determine fitness for service.

22.8 H00-99 DISEASES OF THE EYE AND EAR

22.8.1 EYE DISEASES

H00-59	Eye disorders – Progressive or recurrent (eg glaucoma, maculopathy, diabetic retinopathy, retinitis pigmentosa, keratoconus, diplopia, blepharospasm, uveitis, corneal ulceration and retinal detachment) Future inability to meet vision standards, risk of recurrence.	T – Temporary inability to meet relevant vision standards (Ch 12) and low likelihood of subsequent deterioration or impairing recurrence once treated or recovered P – Inability to meet relevant vision standards (Ch 12) or, if treated, increased likelihood of subsequent deterioration or impairing recurrence	R – Near coastal waters if recurrence unlikely but foreseeable and treatable with earl medical intervention. L – If risk of progression foreseeable but unlikely and can be detected by regular monitoring.	Very low likelihood of recurrence. Progression to a level where visual standard (Ch 12) are not met during period of certificate is very unlikely

All of the information given here must be used in conjunction with the Vision Standards outlined in Chapter 12.

22.8.1.1 G24.5 - BLEPHAROSPASM

Reviewed 2025-12-17

Note:
In the IMO/ILO Guidelines on the Medical Examination of Seafarers, upon which the Norwegian Health Regulations are based, blepharospasm is included under diseases of the eye (ICD-10 section H), despite being a neurological disorder (ICD-10 section G). This classification explains why blepharospasm is addressed within this section.

Significance	Blepharospasm is a focal dystonia characterised by involuntary, repetitive spasms of the orbicularis oculi and other periocular muscles. These spasms typically manifest as increased blinking and involuntary eye closure, which may be bilateral, synchronous, and symmetric, though asymmetry can occur. The condition ranges from mild, non-disabling symptoms to severe forms causing significant visual impairment due to prolonged eye closure [581] [582]. Given the critical importance of visual function for safe performance of seafaring duties, blepharospasm poses a potential risk to the health and safety of the individual, other crew members, passengers, and the safe operation of the vessel.
Possible medical incident(s)	Intermittent or sustained involuntary eye closure leading to transient or persistent visual impairment. Increased symptom severity under conditions of bright light, stress, or fatigue, potentially exacerbating functional limitations. Impaired ability to perform regular and emergency duties requiring sustained visual attention, such as navigation, lookout, and machinery operation.

[581] Hallett M, Evinger C, Jankovic J, et al. Update on blepharospasm: report from the BEBRF International Workshop. Neurology 2008; 71:1275.
[582] Defazio G, Hallett M, Jinnah HA, et al. Blepharospasm 40 years later. Mov Disord 2017; 32:498.

General likelihood	Blepharospasm is a rare neurological disorder with variable clinical presentation and progression. Symptoms may fluctuate in severity and can be exacerbated by environmental factors such as bright light or psychological stress. The condition often requires specialist neurological assessment for diagnosis and management. The likelihood of symptom exacerbation during critical tasks such as driving or operating machinery is significant and must be carefully evaluated.
Consequences	The primary consequence of blepharospasm is impaired visual function due to involuntary eye closure, which may compromise the seafarer's ability to safely perform safety-critical tasks. This increases the risk of accidents, operational errors, and may jeopardise the safety of the individual, crew, passengers, and vessel. The unpredictable nature of spasms can also cause psychological distress and reduce quality of life.
Unmitigated risk	Without appropriate diagnosis and management, blepharospasm may result in unacceptable risk to safe service on board due to intermittent or persistent visual impairment and associated functional limitations.
Mitigation	Possible mitigating measures include: • Comprehensive neurological and ophthalmological assessment by specialists. • Individualised risk assessment based on symptom severity, frequency, and impact on function. • Treatment options such as botulinum toxin injections to reduce muscle spasms and improve visual function. • Use of supportive measures including tinted lenses or environmental modifications to reduce symptom triggers. • Time-limited medical certification with regular reassessment to monitor symptom control and functional capacity. • Restrictions on duties or sailing areas may be applied depending on residual symptoms and risk assessment.
Mitigated risk	With appropriate specialist management and tailored interventions, many individuals with blepharospasm may maintain sufficient visual function to safely perform their duties. The mitigated risk depends on individual response to treatment and adherence to follow-up. If mitigated risk remains unacceptable, temporary or permanent unfitness for service should be considered.
Recommendation	Specialist neurological and ophthalmological evaluation is essential to establish diagnosis and guide management. Psychological support may be beneficial due to the chronic and potentially disabling nature of the condition.

22.8.1.2 H18.6 - KERATOCONUS

Reviewed 2025-12-17

Significance	Keratoconus is a progressive corneal disorder characterised by thinning and conical protrusion of the normally dome-shaped cornea. This deformation leads to irregular astigmatism and consequent impairment of visual acuity. The condition typically manifests during adolescence or early adulthood and may progress over several years. Although the exact aetiology remains unclear, genetic predisposition plays a significant role. The condition may be managed with contact lenses although a corneal transplant may be required [583]. Visual acuity and corneal integrity are critical for the safe performance of seafaring duties, including navigation, lookout, machinery operation, and emergency response.
Possible medical incident(s)	Progressive visual impairment due to irregular astigmatism and corneal distortion, resulting in blurred and distorted vision. Acute visual deterioration secondary to complications such as corneal hydrops (sudden corneal swelling) or scarring. Corneal hydrops may occur in about 3 percent of patients with keratoconus [584]. In advanced cases, the need for corneal transplantation to restore visual function. Visual impairment may compromise the ability to meet the visual standards required for safe maritime operations.
General likelihood	Keratoconus is a progressive condition. In a 2019 meta-analysis of the natural history of keratoconus, factors associated with a higher likelihood of progression included younger age and keratometry measurements steeper than 55 diopters at presentation [585]. Other factors associated with progression are corneal scaring and worsening visual acuity [586] [587]. One study reported a 12 percent rate of keratoplasty over eight years of follow-up [588]. However, the introduction of corneal collagen cross-linking may lead to a reduction in the number of keratoplasties needed to preserve functional vision in patients with keratoconus [589]. Keratoconus progression varies widely among individuals. The condition often progresses slowly over years but may accelerate during adolescence or pregnancy. Some patients experience stable disease for extended periods, while others exhibit rapid deterioration. Epidemiological data indicate that approximately 20% of patients may require corneal transplantation during their

[583] http://www.moorfields.nhs.uk/condition/keratoconus
[584] Fan Gaskin JC, Patel DV, McGhee CN. Acute corneal hydrops in keratoconus - new perspectives. Am J Ophthalmol 2014; 157:921.
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[588] Gordon MO, Steger-May K, Szczotka-Flynn L, et al. Baseline factors predictive of incident penetrating keratoplasty in keratoconus. Am J Ophthalmol 2006; 142:923.
[589] Hagem AM, Thorsrud A, Sæthre M, et al. Dramatic Reduction in Corneal Transplants for Keratoconus 15 Years After the Introduction of Corneal Collagen Crosslinking. Cornea 2024; 43:437.

	lifetime. The likelihood of progression and complications necessitates regular ophthalmological monitoring.
Consequences	Visual acuity loss and distortion can significantly impair the seafarer's ability to perform safety-critical tasks, increasing the risk of accidents and operational errors. Reduced visual function may affect navigation, lookout duties, machinery operation, and emergency response capabilities. The chronic nature of the condition may also have psychological and quality-of-life implications.
Unmitigated risk	Without timely diagnosis, monitoring, and management, keratoconus may progress to severe visual impairment or blindness, posing unacceptable risks to the individual's safety and that of the crew and vessel. Unmitigated risk is therefore considered unacceptable for seafarers with untreated or poorly controlled keratoconus.
Mitigation	Possible mitigating measures include: • Regular ophthalmological follow-up with corneal topography and visual acuity assessment to monitor disease progression. • Use of rigid gas-permeable or scleral contact lenses to correct irregular astigmatism and improve vision. • Corneal cross-linking therapy to halt or slow progression in early to moderate stages. • Corneal transplantation in advanced cases where vision cannot be adequately corrected by lenses. • Time-limited medical certification with periodic reassessment to ensure ongoing fitness for duty. • Restrictions on duties or sailing areas may be applied based on individual visual capacity and risk assessment.
Mitigated risk	With appropriate treatment and monitoring, many seafarers with keratoconus may maintain sufficient visual function to safely perform their duties. The mitigated risk depends on individual disease stability, treatment response, and adherence to follow-up. If the mitigated risk remains unacceptable, temporary or permanent unfitness for service should be considered. Risk assessments must separately evaluate safety for the individual, crew, and ship operations.
Recommendation	Early diagnosis and specialist ophthalmological management are essential to optimise outcomes. Psychological support may be beneficial due to the chronic and potentially disabling nature of the condition.

22.8.1.3 H20 - UVEITIS

Reviewed 2025-12-17

Significance	Uveitis encompasses a heterogeneous group of inflammatory conditions affecting the uveal tract of the eye. The aetiology includes: Infectious causes Systemic immune-mediated diseases (accounting for approximately 40% of cases) Syndromes usually confined to the eye

	Masquerade syndromes (conditions mimicking uveitis) Idiopathic, undifferentiated, or unclassifiable cases (approximately 30%) **Anterior uveitis** typically presents with redness at the limbus, constricted pupil, and ocular pain. The degree of visual loss varies. **Posterior uveitis** is generally painless, with symptoms including floaters and reduced visual acuity; conjunctival redness is usually absent or minimal. Complications of uveitis include recurrent attacks, band keratopathy, posterior synechiae, cataract formation, intraocular hypertension, glaucoma, and cystoid macular oedema.
Possible medical incident(s)	Acute anterior uveitis may cause incapacitating symptoms, rendering the seafarer unable to perform duties and necessitating urgent ophthalmological evaluation. Visual disturbances from posterior uveitis may impair the ability to safely perform safety-critical task
Likelihood	The likelihood of relapse or recurrence of uveitis is largely dependent on the underlying cause. Specialist ophthalmological assessment is essential to determine prognosis and guide management. The frequency of follow-up examinations will depend on the severity of uveitis, associated visual impairment, and intraocular pressure as well as the therapies being used.
Consequences	The consequences of uveitis vary with severity and context: Minor consequences may be experienced if the seafarer is near shore with ready access to hospital and specialist care. Serious consequences arise if symptoms occur while far at sea, potentially necessitating medical evacuation (MEDEVAC) and replacement of crew, with significant operational impact.
Unmitigated risk	Without appropriate diagnosis, treatment, and follow-up, uveitis poses an unacceptable risk due to potential for acute incapacitation, visual loss, and complications.
Mitigation	Possible mitigating measures include: • Regular follow-up and treatment by an ophthalmologist tailored to the underlying cause and disease activity. • Restriction of sailing area to ensure proximity to specialist care for individuals at low to moderate risk. • For those at high risk of relapse or severe complications, service at sea may be contraindicated. • Time-limited medical certification with periodic reassessment.
Risk assessment	Due to the heterogeneity of uveitis and variability in relapse risk, individualised risk assessment with specialist input is mandatory.

	With appropriate management and restrictions, some seafarers may maintain acceptable risk levels for service. If mitigated risk remains unacceptable, temporary or permanent unfitness should be considered.
Recommendation	Specialist ophthalmological evaluation is essential for diagnosis, prognosis, and management planning.

22.8.1.4 H33 – RETINAL DETACHMENT – AMOTIO RETINAE

Reviewed 2025-12-17

Significance	Retinal detachment is a serious ophthalmic condition characterised by separation of the neurosensory retina from the underlying retinal pigment epithelium. It is classified into two main types: Rhegmatogenous retinal detachment, caused by a retinal break or tear allowing fluid to accumulate beneath the retina. Non-rhegmatogenous retinal detachment, resulting from leakage of fluid beneath the retina or vitreous traction without a retinal break. Major risk factors include high myopia and posterior vitreous detachment (PVD), which most commonly occurs between 50 and 75 years of age. PVD is a frequent precursor to retinal tears and subsequent detachment.
Possible medical incident(s)	Acute retinal detachment presenting with symptoms such as sudden onset of floaters, flashes of light, and a shadow or curtain over part of the visual field. Immediate medical intervention is required; the affected individual must rest and be transported urgently to hospital for specialist ophthalmological treatment. Medical evacuation (MEDEVAC) is often necessary.
Likelihood	In individuals with unilateral PVD, approximately 90% develop contralateral PVD within three years [590]. Patients diagnosed with uncomplicated PVD have an estimated 3.4% risk of developing a retinal tear within six weeks of diagnosis [591]. The risk of progression to retinal detachment depends on the presence of retinal breaks and other individual factors.
Consequences	For the affected individual, retinal detachment is a major medical emergency with potential for significant and permanent visual loss if untreated. For the crew, the incident imposes significant operational challenges, including management of the affected seafarer, observation requirements, and coordination of MEDEVAC.

[590] Hikichi T, Yoshida A; Time course of development of posterior vitreous detachment in the fellow eye after development in the first eye. Ophthalmology. 2004;111(9):1705.
[591] Hollands H, Johnson D, Brox AC, Almeida D, Simel DL, Sharma S; Acute-onset floaters and flashes: is this patient at risk for retinal detachment? JAMA. 2009;302(20):2243

	For the ship, there are risks related to diversion, disruption of operations, and potential safety implications.
Unmitigated risk	Without prompt diagnosis and treatment, retinal detachment carries a high risk of permanent vision loss and disability, rendering the individual unfit for service.
Mitigation	Seafarers at risk of retinal detachment should serve close to shore or in areas with ready access to hospital and specialist ophthalmological care. Regular ophthalmological monitoring following PVD or retinal tear diagnosis is essential. Time-limited medical certification with reassessment following treatment and recovery. Restrictions on duties or sailing areas may be necessary based on individual risk and clinical status.
Mitigated risk	With timely specialist intervention and appropriate follow-up, many seafarers may return to service with acceptable risk. Individualised risk assessment is essential to determine fitness for duty and any necessary restrictions.
Recommendation	Immediate referral to ophthalmology is mandatory upon suspicion or diagnosis of retinal detachment.

22.8.1.5 H35.3 - AGE-RELATED MACULA DEGENERATION (AMD)

Reviewed 2025-12-17

Significance	Age-related macular degeneration (AMD) is a progressive retinal disorder characterised by loss of central vision due to degeneration of the macula. This condition significantly impairs visual acuity necessary for critical tasks such as reading, driving, and operating visual display units. Epidemiological risk factors include advanced age (rarely occurring before 55 years)[592], smoking, positive family history, cardiovascular disease, and cataracts. Clinically, AMD is classified into two main types: dry (atrophic) and wet (neovascular or exudative), with differing prognoses and progression patterns.
Possible medical incident(s)	Impairment of central vision essential for activities such as driving, reading, watching television or monitors, and performing activities of daily living. Progression from dry to wet AMD may result in rapid and severe central vision loss. Visual impairment may lead to disability, reduced quality of life, and increased risk of depression.
Likelihood	Dry AMD may progress to wet AMD in a subset of patients. The risk of developing wet AMD in individuals with bilateral early dry AMD (characterised

[592] Smith W, Assink J, Klein R, Mitchell P, Klaver CC, Klein BE, Hofman A, Jensen S, Wang JJ, de Jong PT; Risk factors for age-related macular degeneration: Pooled findings from three continents. Ophthalmology. 2001;108(4):697.

	by bilateral soft drusen) is estimated at 1.0 to 4.7% at one year and 13 to 18% at three years [593]. Although wet AMD accounts for only 10 to 15% of all AMD cases, it is responsible for over 80% of severe visual loss or legal blindness associated with the disease. Wet AMD is characterised by rapid distortion and loss of central vision over weeks to months, contrasting with the slow, gradual vision loss seen in dry AMD. The contralateral eye is at high risk of developing neovascularisation, with cumulative incidence rates of 10%, 28%, and 42% at one, three, and five years respectively [594]. While most patients with advanced AMD do not become completely blind, significant visual loss results in disability and clinical depression in over one third of affected individuals [595].
Consequences	The consequences of AMD range from minor to severe visual impairment, depending on the type (dry or wet), severity as assessed by a specialist, and the seafarer's position and sailing area. Central vision loss may critically affect the ability to perform safety-critical tasks on board, including navigation, machinery operation, and emergency response.
Mitigation	Mitigating measures include: • Restriction of position and duties to roles compatible with visual capacity. • Limitation of sailing area to reduce operational risk. • Time-limited medical certification with regular ophthalmological follow-up. • Specialist assessment and treatment as indicated, including anti-VEGF therapy for wet AMD.
Risk assessment	With appropriate specialist management and adherence to restrictions, the mitigated risk may be acceptable for some seafarers. If visual capacity remains insufficient despite treatment and mitigation, temporary or permanent unfitness for service should be considered.
Recommendation	Each case requires individual assessment following specialist ophthalmological advice, with particular attention to central visual acuity and field. Visual function must be thoroughly evaluated during medical examinations. Restrictions on position, trade area, and certificate duration should be applied as necessary to ensure safety. Early referral and ongoing specialist management are essential to optimise outcomes and maintain fitness for service.

[593] Bressler NM; Age-related macular degeneration is the leading cause of blindness... JAMA. 2004;291(15):1900
[594] Risk factors for choroidal neovascularization in the second eye of patients with juxtafoveal or subfoveal choroidal neovascularization secondary to age-related macular degeneration. Macular Photocoagulation Study Group. Arch Ophthalmol. 1997;115(6):741
[595] Jager RD, Mieler WF, Miller JW; Age-related macular degeneration. N Engl J Med. 2008;358(24):2606

22.8.1.6 H35.5 - RETINITIS PIGMENTOSA – HEREDITARY RETINAL DYSTROPHY

Reviewed 2025-12-17

Significance	Retinitis pigmentosa (RP) is one subtype of a heterogeneous group of inherited retinal dystrophies characterised by progressive degeneration and dysfunction of the retina. Approximately 70% of patients report a family history of RP. The global prevalence is estimated at 1 in 4,000 to 5,000 individuals [596]. One of the earliest symptoms is reduced night vision (nyctalopia), often manifesting as disorientation in dim light or slow adaptation to low-light conditions [597] [598] [599] [600] [601]. Progressive constriction of the visual fields and impairment of visual acuity follow. Night and peripheral vision deteriorate progressively, leading to markedly constricted visual fields and significant vision loss in some patients. Clinical presentation varies widely; some individuals experience severe visual impairment in childhood, while others remain asymptomatic well into adulthood. However, most patients meet the criteria for legal blindness by approximately 40 years of age, primarily due to visual field restriction. [602]. Night blindness may be under-recognised, as some patients do not report symptoms until the disease is advanced [603]. Progressive visual field constriction may cause patients to appear “clumsy” prior to diagnosis [604]. Longitudinal studies indicate a visual field reduction rate of approximately 4.6% to 12% per year [605] [606]. Visual acuity is variably affected but typically declines over time.
Possible medical incident(s)	**Reduced night vision**: Reduced night vision leading to disorientation and slow adaptation in dim lighting conditions [607]. **Visual field loss:** Progressive visual field loss resulting in impaired spatial awareness and increased risk of accidents [608]. Patients may be unaware of visual field loss until the field narrows to approximately 50 degrees in diameter (normal visual field is approximately 180 degrees).

[596] Daiger SP, Bowne SJ, Sullivan LS. Perspective on genes and mutations causing retinitis pigmentosa. Arch Ophthalmol 2007; 125:151.
[597] Weleber RG, Gregory-Evans K. Retinitis Pigmentosa and Allied Disorders. In: Retina, Ryan SJ (Ed), Elsevier Mosby, 2006. p.395.
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[600] Pagon RA. Retinitis pigmentosa. Surv Ophthalmol 1988; 33:137.
[601] Hartong DT, Berson EL, Dryja TP. Retinitis pigmentosa. Lancet 2006; 368:1795.
[602] Hartong DT, Berson EL, Dryja TP; Retinitis pigmentosa. Lancet. 2006;368(9549):1795.
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[604] Pagon RA; Retinitis pigmentosa. Surv Ophthalmol. 1988;33(3):137
[605] Berson EL, Sandberg MA, Rosner B, Birch DG, Hanson AH; Natural course of retinitis pigmentosa over a three-year interval. Am J Ophthalmol. 1985;99(3):240.
[606] Holopigian K, Greenstein V, Seiple W, Carr RE; Rates of change differ among measures of visual function in patients with retinitis pigmentosa.
[607] Heckenlively JR, Yoser SL, Friedman LH, Oversier JJ. Clinical findings and common symptoms in retinitis pigmentosa. Am J Ophthalmol 1988; 105:504.
[608] Hartong DT, Berson EL, Dryja TP. Retinitis pigmentosa. Lancet 2006; 368:1795.

Likelihood	The progression and severity of RP vary considerably between individuals. Risk assessment must be conducted on a case-by-case basis with specialist ophthalmological input.
Consequences	Consequences depend on the severity of visual impairment, the seafarer's position, job tasks, and sailing area. Visual field constriction and night vision loss may compromise the ability to perform safety-critical duties, increasing the risk of accidents and operational hazards.
Unmitigated risk	Without appropriate specialist management and monitoring, the risk of progressive visual impairment is significant and may be unacceptable for safe service on board.
Mitigation	Possible mitigating measures include: • Regular follow-up and management by an ophthalmologist specialising in hereditary retinal diseases. • Individualised assessment of fitness for duty based on visual function and disease progression. Time restriction until next follow-up by specialist is recommended. • Application of job or sailing area restrictions as appropriate.
Mitigated risk	Following specialist management and tailored risk assessment, the mitigated risk may be acceptable for some seafarers. Ongoing monitoring and reassessment are essential to ensure continued fitness for service.
Recommendation	All patients with RP should be under the care of a specialist ophthalmologist experienced in hereditary retinal disorders. An individualised risk assessment must be conducted in close collaboration with the treating specialist. Treatment options remain limited; therefore, emphasis is placed on monitoring and supportive care. Medical certification should reflect the individual's visual capacity and risk profile, with appropriate restrictions and follow-up intervals.

22.8.1.7 H36.0 - DIABETIC RETINOPATHY

Reviewed 2025-12-17

Significance	Diabetic retinopathy (DR) is a leading cause of visual impairment globally and the principal cause of vision loss in individuals aged 25 to 74 years. It is categorised into two main forms: non-proliferative diabetic retinopathy (NPDR) and proliferative diabetic retinopathy (PDR). Visual loss in NPDR is typically progressive, primarily due to macular oedema.

	NPDR is further classified into mild, moderate, severe, and very severe stages, reflecting increasing risk of progression to proliferative retinopathy [609]. NPDR is classified as mild, moderate, severe and very severe. PDR is classified as early, high risk and severe.
Possible medical incident(s)	Progressive impairment of vision due to advancing retinopathy. In PDR, acute visual loss may occur secondary to vitreous haemorrhage from fragile neovascular vessels.
Likelihood	The one-year likelihood of progression from NPDR to PDR varies by severity [610]: Mild NPDR 5% Moderate NPDR 15% Severe NPDR: 52% Very severe NPDR: 75% The five-year risk of progression from early to high-risk PDR is approximately 75%. Untreated high-risk PDR carries a 60% risk of severe vision loss within five years [611]. Likelihood levels: Moderate to High, depending on disease severity and control.
Consequences	Acute visual loss due to vitreous haemorrhage necessitates urgent medical evacuation. Insufficient follow-up and treatment increase the risk of progressive vision impairment and potential blindness, adversely affecting the seafarer's ability to perform safety-critical tasks.
Unmitigated risk	Without appropriate ophthalmological management and follow-up, the risk of severe visual impairment or blindness is unacceptable, posing significant safety risks to the individual and others on board.
Mitigation	Possible mitigating measures include: • Regular and appropriate follow-up by an ophthalmologist. • Timely treatment interventions as indicated (e.g., laser therapy, intravitreal injections). • Time-limited medical certification to ensure adherence to follow-up schedules. • Restrictions on duties or sailing areas may be applied based on individual risk assessment.
Mitigated risk	Depending on individual risk assessment and specialist advice.
Recommendation	Agreement on appropriate ophthalmological follow-up is essential. Time limitations on medical certificates should be utilised to ensure timely reassessment. Early referral and ongoing specialist management are critical to prevent progression and maintain fitness for duty.

[609] Fraser C E, D'Amico D J, Nathan D M, Trobe J, Mulder J E. Diabetic retinopathy: Classification and clinical features. UpToDate literature review current through Sep 2020. Topic last updated Oct 02, 2018.
[610] Aiello LM. Perspectives on diabetic retinopathy. Am J Ophthalmol 2003; 136:122.
[611] Aiello LM. Perspectives on diabetic retinopathy. Am J Ophthalmol 2003; 136:122.

22.8.1.8 H40.1 - PRIMARY OPEN ANGLE GLAUCOMA (POAG)

Reviewed 2025-12-17

Significance	Primary open angle glaucoma (POAG) is a chronic optic neuropathy characterised by progressive loss of peripheral visual fields, typically followed by central visual field impairment. Although frequently associated with elevated intraocular pressure (IOP), raised IOP is neither a prerequisite for the onset nor the progression of the disease. POAG is of critical importance in the maritime context as it may impair visual function essential for safe and effective performance of seafaring duties. The condition poses a potential risk to the health and safety of the affected individual, other crew members, passengers, and the safe operation of the vessel.
Possible medical incident(s)	Progressive deterioration of visual fields may lead to failure to meet the visual acuity and field standards required for seafaring tasks, potentially resulting in partial or complete blindness in one or both eyes. Impaired peripheral vision increases the risk of falls and accidents on board. Reduced visual capacity may compromise the ability to perform daily activities, including look-out duties, navigation and other tasks demanding adequate vision.
Likelihood	Leading cause of blindness in the world. Risk of blindness increases with age[612]. Reduced daily functioning, including driving[613] [614]. Increased likelihood for falls and motorcycle accidents[615]. Among Caucasians, 75-95% of primary glaucoma cases are open angle, with angle-closure comprising only a very small minority of cases. The distribution is reversed among Asians and Inuits, where angle-closure glaucoma predominates (80-90%) [616]. Incidence rates: less than 1% under age 55, approximately 2% at age 65, and 4% at age 80 [617]. Family history confers a relative risk increase of 3.7-fold if a sibling is affected and 2.2-fold if a parent is affected [618]. Diabetes: A 2014 systematic review and meta-analysis of 47 observational studies found that the likelihood for primary open-angle glaucoma was increased for patients with diabetes compared with those without (RR 1.48, 95% CI 1.29-1.71)[619]. The likelihood increased 5 percent each year after the diagnosis of diabetes.

[612] Sommer A, Tielsch JM, Katz J, et al. Racial differences in the cause-specific prevalence of blindness in east Baltimore. N Engl J Med 1991; 325:1412.
[613] Ang GS, Eke T. Lifetime visual prognosis for patients with primary open-angle glaucoma. Eye (Lond) 2007; 21:604.
[614] Richman J, Lorenzana LL, Lankaranian D, et al. Relationships in glaucoma patients between standard vision tests, quality of life, and ability to perform daily activities. Ophthalmic Epidemiol 2010; 17:144.
[615] Quigley HA, Broman AT. The number of people with glaucoma worldwide in 2010 and 2020. Br J Ophthalmol 2006; 90:262.
[616] Congdon N, Wang F, Tielsch JM. Issues in the epidemiology and population-based screening of primary angle-closure glaucoma. Surv Ophthalmol 1992; 36:411.
[617] Friedman DS, Wolfs RC, O'Colmain BJ, et al. Prevalence of open-angle glaucoma among adults in the United States. Arch Ophthalmol 2004; 122:532.
[618] Tielsch JM, Katz J, Sommer A, et al. Family history and risk of primary open angle glaucoma. The Baltimore Eye Survey. Arch Ophthalmol 1994; 112:69.
[619] Zhao D, Cho J, Kim MH, et al. Diabetes, fasting glucose, and the risk of glaucoma: a meta-analysis. Ophthalmology 2015; 122:72.

	Hypertension: Likelihood for primary open-angle glaucoma was increased in patients with hypertension compared with those without (relative risk [RR] 1.16, 95% CI 1.05-1.28)[620]. Elevated intraocular pressure: Although not necessary, neither for the development nor for the progression of open-angle glaucoma, increased IOP is an important "risk factor" for both[621] [622] [623] [624] [625] [626]. Nearly 40% of patients with otherwise characteristic open-angle glaucoma will not have an elevated IOP[627] Even if the IOP is within the normal range of 8-22 mmHg, IOP was a significant risk factor for progression of glaucoma (hazard ratio [HR] 1.11, 85% CI 1.06-1.17)[628]. In the USA, only a small proportion will have open-angle glaucoma with a normal IOP, whilst in Asia, the majority will have a normal IOP, still having open angle glaucoma[629]
Consequences	The primary consequences relate to progressive visual impairment, notably peripheral visual field loss, which may compromise the ability to safely perform safety-critical tasks on the bridge, deck, or engine room. This includes navigation, lookout duties, machinery operation, and emergency response. Visual impairment increases the risk of accidents and may jeopardise the safety of the individual, fellow crew members, passengers, and the vessel's operation. The STCW Convention Table A-I/9 (Health Regulations Appendix A) outlines the visual standards relevant to seafarers.
Unmitigated risk	Without appropriate diagnosis, treatment, and monitoring, the risk of progressive visual field loss and eventual blindness is unacceptable. This poses a significant threat to the individual's health and safety, as well as to crew and ship safety. Unmitigated risk is therefore considered unacceptable for seafarers with untreated or poorly controlled POAG.
Mitigation	Mitigating measures include: • Early and appropriate screening to identify cases of POAG. • Regular ophthalmological follow-up with monitoring of intraocular pressure and visual fields. • Medical management with intraocular pressure-lowering medications or surgical interventions as indicated.

[620] Zhao D, Cho J, Kim MH, Guallar E. The association of blood pressure and primary open-angle glaucoma: a meta-analysis. Am J Ophthalmol 2014; 158:615.
[621] Ekström C. Risk factors for incident open-angle glaucoma: a population-based 20-year follow-up study. Acta Ophthalmol 2012; 90:316.
[622] Heijl A, Leske MC, Bengtsson B, et al. Reduction of intraocular pressure and glaucoma progression: results from the Early Manifest Glaucoma Trial. Arch Ophthalmol 2002; 120:1268.
[623] Nemesure B, Honkanen R, Hennis A, et al. Incident open-angle glaucoma and intraocular pressure. Ophthalmology 2007; 114:1810.
[624] Miglior S, Zeyen T, Pfeiffer N, et al. Results of the European Glaucoma Prevention Study. Ophthalmology 2005; 112:366.
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[626] Martínez-Belló C, Chauhan BC, Nicolela MT, et al. Intraocular pressure and progression of glaucomatous visual field loss. Am J Ophthalmol 2000; 129:302.
[627] Prum BE Jr, Rosenberg LF, Gedde SJ, et al. Primary Open-Angle Glaucoma Preferred Practice Pattern(®) Guidelines. Ophthalmology 2016; 123:P41.
[628] Bengtsson B, Leske MC, Hyman L, et al. Fluctuation of intraocular pressure and glaucoma progression in the early manifest glaucoma trial. Ophthalmology 2007; 114:205.
[629] Cedrone C, Mancino R, Cerulli A, et al. Epidemiology of primary glaucoma: prevalence, incidence, and blinding effects. Prog Brain Res 2008; 173:3.

	• Time-limited medical certificates with periodic reassessment to monitor disease progression. • Restrictions on job tasks or sailing areas may be applied based on individual risk assessment and visual capacity.
Mitigated risk	With effective treatment and monitoring, the risk of significant visual deterioration can be reduced to an acceptable level for many seafarers. The mitigated risk depends on individual response to therapy, stability of visual fields, and adherence to follow-up.
Recommendation	Visual capacities must be thoroughly assessed at all medical examinations by the seafarer's doctor, including detailed visual field testing. Time limitations on medical certificates and restrictions on position or sailing area may be appropriate to ensure adequate follow-up and safety. Early referral to an ophthalmologist is essential for diagnosis, treatment initiation, and ongoing management. Special consideration should be given to seafarers with comorbidities such as diabetes or hypertension, which may increase risk.

22.8.1.9 H40.2 - PRIMARY ANGLE CLOSURE GLAUCOMA

Reviewed 2025-12-17

Significance	Angle-closure glaucoma is characterised by narrowing or closure of the anterior chamber angle, leading to increased intraocular pressure and potential optic nerve damage. This condition is of particular concern due to the risk of acute attacks causing sudden visual impairment and pain, which may incapacitate the seafarer and jeopardise safety onboard. Angle-closure glaucoma is more prevalent in Asian populations, whereas open-angle glaucoma is more common in European or African populations [630].The highest rates of angle-closure glaucoma are reported in Inuit and Asian populations [631] [632] [633] [634] [635], and lower rates are reported in African and European populations [636] [637] [638] [639].

[630] Tham YC, Li X, Wong TY, et al. Global prevalence of glaucoma and projections of glaucoma burden through 2040: a systematic review and meta-analysis. Ophthalmology 2014; 121:2081.
[631] Foster PJ, Johnson GJ. Glaucoma in China: how big is the problem? Br J Ophthalmol 2001; 85:1277.
[632] Bourne RR, Sørensen KE, Klauber A, et al. Glaucoma in East Greenlandic Inuit--a population survey in Ittoqqortoormiit (Scoresbysund). Acta Ophthalmol Scand 2001; 79:462.
[633] Congdon N, Wang F, Tielsch JM. Issues in the epidemiology and population-based screening of primary angle-closure glaucoma. Surv Ophthalmol 1992; 36:411.
[634] Congdon NG, Friedman DS. Angle-closure glaucoma: impact, etiology, diagnosis, and treatment. Curr Opin Ophthalmol 2003; 14:70.
[635] Wang JC, Chew PT. What is the direct cost of treatment of acute primary angle closure glaucoma? The Singapore model. Clin Exp Ophthalmol 2004; 32:578.
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[638] Buhrmann RR, Quigley HA, Barron Y, et al. Prevalence of glaucoma in a rural East African population. Invest Ophthalmol Vis Sci 2000; 41:40.
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Possible medical incident(s)	An acute angle-closure attack presents with severe eye pain, headache, decreased vision, nausea, and vomiting. This constitutes a medical emergency requiring urgent treatment within hours to prevent irreversible optic nerve damage and permanent vision loss.
Likelihood	Among Caucasians, 75-95% of primary glaucoma is due to open angle glaucoma, with angle-closure comprising only a very small minority of cases. These figures are reversed among Asians and Eskimos, where angle-closure makes up 80-90% pf primary glaucoma[640]. Likelihood dependent on specialist assessment. Untreated, approximately 50% of fellow eyes in acute angle-closure patients will have an angle-closure attack within five years[641]. The outcomes of patients with angle-closure glaucoma depend on how early the disease is detected. Because glaucoma damage to the optic nerve is generally not reversible and can occur within a matter of hours in the case of an acute angle-closure attack, it is important that an ophthalmologist see these patients urgently to provide prompt diagnosis and treatment. The fellow eye also must be evaluated as prophylactic treatment with laser peripheral iridotomy can prevent future angle-closure. The outcome for patients with secondary angle-closure depends on its cause. There are many medications that carry warnings or contraindications regarding use in patients with glaucoma. These warnings and contraindications are relevant regardless of whether the patient is taking glaucoma medications; they are not drug-drug interactions.
Consequences	**Individual:** Acute attacks are incapacitating and carry a significant risk of blindness if not treated promptly. **Crew:** The affected seafarer requires immediate medical care and evacuation, potentially overburdening other crew members. **Ship:** Incapacitation of a crew member, need for medical evacuation (MEDEVAC), and associated operational risks.
Unmitigated risk	To be assessed individually based on clinical findings and specialist input.
Mitigation	• Surgical treatment (e.g., laser peripheral iridotomy) may be indicated to prevent future attacks. • Ongoing specialist review is required to monitor visual acuity, visual fields, and intraocular pressure (IOP). • The fellow eye should be examined, and prophylactic treatment considered if a narrow angle is detected. • Restriction in sailing area – with MEDEVAC response time preferably within one hour.

[640] Congdon N, Wang F, Tielsch JM. Issues in the epidemiology and population-based screening of primary angle-closure glaucoma. Surv Ophthalmol 1992; 36:411.
[641] Saw SM, Gazzard G, Friedman DS; Interventions for angle-closure glaucoma: an evidence-based update. Ophthalmology. 2003;110(10):1869

Mitigated risk	Unrestricted, unlimited medical certificate is usually unacceptable – mainly because ophtalmological intervention may be urgently needed in cases of relapse. Risk assessment must consider the likelihood of acute attack, the seafarer's position, and the sailing area.
Recommendation	Avoid deployment of high-risk individuals to sea. Moderate-risk individuals should be restricted to close-to-shore operations, provided the vessel does not rely on them as the sole operator in a critical position. Patients who have undergone surgical intervention require ongoing specialist ophthalmological follow-up. Prophylactic laser peripheral iridotomy should be performed on the fellow eye if a narrow angle is identified to prevent future attacks.

22.8.1.10 H53.2 - DIPLOPIA

Reviewed 2025-12-17

Significance	Diplopia, or double vision, is the perception of two images of a single object. Binocular diplopia occurs when both eyes are open and resolves when either eye is closed, typically resulting from dysfunction of one or more extraocular muscles or their neurological control. In contrast, monocular diplopia persists when one eye is closed and usually indicates local ocular pathology or refractive abnormalities. Diplopia can significantly impair visual function, which is critical for safe performance of seafaring duties, including navigation, lookout, machinery operation, and emergency response.
Possible medical incident(s)	Impaired depth perception and spatial orientation due to double vision, increasing the risk of accidents and errors in safety-critical tasks. Functional limitations in performing occupational duties, particularly those requiring precise visual coordination. Potential social and psychological impact due to persistent visual disturbance.
General likelihood	The prevalence and severity of diplopia vary widely depending on underlying aetiology. For example, in a study of 44 manual workers treated for orbital trauma, 59% experienced diplopia despite good visual acuity. Of these, 45.5% retained the ability to perform their former occupation, while 20.5% were unable to do so. Total or partial inability to work was certified in 23% of subjects. Approximately 30% reported significant limitations in social functioning, and 12% remained dependent on others for daily activities[642].

[642] Loba P, Nowakowska O, Marczyk W, Sokalska K, Broniaczyk-Loba A. Diplopia as a factor influencing occupational and social activities of people after orbital trauma. Med Pr. 2012;63(5):541-6. PMID 23373322.

	There are no precise statistics on how often people with diplopia are involved in accidents or safety-threatening incidents. However, clinical literature consistently highlights that diplopia significantly increases the risk of misjudging distances, misinterpreting surroundings, and making erroneous decisions, especially in contexts like driving, operating machinery, or navigating unfamiliar environments [643]. The likelihood of diplopia and its impact must be assessed on an individual basis, considering the cause and severity.
Consequences	Diplopia may lead to impaired visual function, affecting the seafarer's ability to safely perform duties that require accurate depth perception and spatial judgement. This increases the risk of falls, collisions, and operational errors, potentially compromising the safety of the individual, crew, passengers, and vessel. Persistent diplopia may also result in psychological distress and reduced quality of life.
Unmitigated risk	Without appropriate diagnosis and management, diplopia poses an unacceptable risk to safe service on board due to impaired visual function and increased accident risk.
Mitigation	Possible mitigating measures include: • Comprehensive ophthalmological assessment by a specialist to determine the underlying cause and severity. • Individualised risk assessment based on specialist findings. • Treatment tailored to the aetiology, which may include prism correction, occlusion therapy, surgery, or neurological management. • Time-limited medical certification with regular reassessment to monitor symptom resolution or progression. • Restrictions on duties or sailing areas may be applied depending on residual symptoms and functional capacity.
Mitigated risk	With appropriate specialist management and tailored interventions, many seafarers may achieve sufficient visual function to safely perform their duties. The mitigated risk depends on the underlying cause, treatment response, and adherence to follow-up. If mitigated risk remains unacceptable, temporary or permanent unfitness for service should be considered.
Recommendation	A full expert ophthalmological assessment is essential and should form the basis of an individualised risk assessment. Psychological support may be considered for those experiencing significant distress or functional limitation.

[643] Sheth T, Moranji M, Jawaid I. Assessment of diplopia in adults. BNJ 2024; 385:e076413. doi: https://doi.org/10.1136/bmj-2023-076413 (Published 23 April 2024)

22.8.2 OTITIS

H65-67	Otitis external; otitis media Recurrence, risk as infection source in food handlers, problems using hearing protection	T – Until treated P – If chronic discharge from ear in food handler	Case-by-case assessment. Consider effects of heat, humidity and hearing protection use in otitis externa.	Effective treatment and no excess likelihood of recurrence

22.8.2.1 H60 - OTITIS EXTERNA

Reviewed 2025-12-18

Significance	Uncomplicated diffuse otitis externa typically responds well to treatment, with clinical resolution observed in approximately 65% to 90% of patients within 7 to 10 days, irrespective of the therapeutic agent employed [644]. However, complications may arise, including periauricular cellulitis and malignant external otitis (also known as necrotizing external otitis). The latter is a severe, potentially life-threatening condition predominantly affecting elderly individuals with diabetes mellitus [645] or those who are immunocompromised. It involves the extension of infection from the external ear canal skin to the underlying bone and marrow spaces at the skull base, potentially resulting in serious intracranial sequelae such as meningitis, brain abscess, and dural sinus thrombophlebitis [646]. Failure of otitis externa to resolve within 7 to 10 days necessitates specialist evaluation to determine the presence or absence of complications and to establish an appropriate treatment and follow-up plan. This condition is significant to the seafarer's ability to perform duties safely and effectively, as well as to the health and safety of others on board and the safe operation of the ship.
Possible medical incident(s)	The clinical presentation of otitis externa varies along a spectrum from mild to severe, with symptom onset typically occurring over several days to a week. Recurrent episodes are common, and the condition may persist or worsen if inadequately treated [647].
Likelihood	The recurrence rate of malignant external otitis is reported to range between 9% and 27% of cases [648]. For uncomplicated otitis externa, recurrence rates are variable but generally lower. Precise annual incidence percentages for recurrence in the seafarer population are not well established; however, the likelihood of recurrence in

[644] Rosenfeld RM, Schwartz SR, Cannon CR, et al. American Academy of Otolaryngology-Head and Neck Surgery Foundation. Clinical practice guideline: acute otitis externa. Otolaryngol Head Neck Surg. 2014;150(suppl 1):S1-S24.
645 Rubin Grandis J, Branstetter BF 4th, Yu VL. The changing face of malignant (necrotising) external otitis: clinical, radiological, and anatomic correlations. Lancet Infect Dis. 2004;4(1):34.
[646] Schwarz GA, Blumenkrantz MJ, Sundmäker WL. Neurologic complications of malignant external otitis. Neurology. 1971;21(11):1077.
[647] Osguthorpe JD, Nielsen DR. Otitis externa: Review and clinical update. Am Fam Physician 2006; 74:1510.
[648] Rubin J, Yu V L. Malignant external otitis: Insights into pathogenesis, clinical manifestations, diagnosis and Therapy. Am J Med. 1988;85:391-398.

	susceptible individuals can be considered moderate to high depending on underlying risk factors.
Consequences	**Individual:** Severe pain associated with otitis externa can render the affected seafarer unable to perform work duties. Access to appropriate treatment is typically unavailable on-board ship, increasing the risk of deterioration. **Crew:** Other crew members may be required to assume the duties of the incapacitated seafarer, potentially leading to increased workload and operational strain. The need for medical evacuation (MEDEVAC) introduces additional risks and logistical challenges. **Ship:** The ship may face operational disruptions including diversion to port, labour shortages, and the necessity for replacement personnel, all of which can impact voyage schedules and safety.
Unmitigated risk	Without treatment or appropriate management, the risk posed by otitis externa—particularly malignant external otitis—is unacceptable due to the potential for severe complications and operational disruption. The unmitigated risk to the individual's health and safety, the safety of the crew, and the safe operation of the ship is therefore assessed as unacceptable.
Mitigation	Mitigating measures include: Prompt and effective medical treatment to resolve infection. Preventive strategies for individuals at risk of recurrence, such as avoiding exposure to heat and humidity, and careful use of hearing protection devices to prevent irritation or trauma to the ear canal. Specialist follow-up for cases not resolving within 7 to 10 days or with complications. Temporary removal from safety-critical duties until full resolution is confirmed. Consideration of certificate limitations regarding duration, position, or sailing area as per the Regulations. In cases where standard mitigation is insufficient, referral to the appellate body for exemption consideration.
Mitigated risk	Following appropriate treatment and preventive measures, the risk of recurrence and severe complications can be substantially reduced. The mitigated risk is generally acceptable if the condition is fully resolved and the seafarer is symptom-free. In cases where residual risk remains, restrictions or limitations on duties or sailing area may be necessary to maintain safety. The mitigated risk assessment should be individualized based on specialist advice.

22.8.2.2 H65-67 – OTITIS MEDIA

Reviewed 2025-12-18

Significance	Acute otitis media (AOM) predominantly affects children, with a significantly lower incidence in adults. AOM typically resolves spontaneously within 12 weeks; however, with appropriate antimicrobial therapy, most patients experience significant clinical improvement within 48 to 72 hours. Due to the increased risk of complications in adults, immediate antibiotic treatment is recommended for older patients. Historically, prior to the

	availability of antibiotics, acute coalescent mastoiditis complicated approximately 20% of AOM cases [649]. Contemporary studies indicate that mastoiditis and other infectious complications now occur in less than 0.5% of adult AOM cases [650] [651]. Complications are more frequent in patients with altered immune status, abnormal ear anatomy, or incomplete treatment. Infection may cause perforation of the tympanic membrane, which facilitates drainage of middle ear abscesses and relieves pressure but necessitates a course of oral and topical antibiotics. Most tympanic membrane perforations heal spontaneously within days, although persistent subjective hearing loss may continue. Chronic otitis media (COM) is classified as follows: Benign (inactive) COM – tympanic membrane perforation without active infection COM with effusion (serous otitis media) Chronic suppurative otitis media (CSOM) This condition is significant to the seafarer's capacity to safely perform duties and may pose a risk to their own health and safety, as well as to the safety of others on board and the ship's operation.
Possible medical incident(s)	Potential medical incidents include recurrent AOM, chronic otitis media (COM), persistent hearing loss, chronic tympanic membrane perforation, mastoiditis, labyrinthitis, facial nerve paralysis, petrositis, otitic meningitis, epidural, subdural and brain abscesses, otitic hydrocephalus, and septic lateral sinus thrombosis. These complications may arise following an episode of AOM.
Likelihood	A Finnish population-based study reported an annual age-adjusted incidence of acute intratemporal and intracranial complications of 0.32 per 100,000 individuals, with 80% of these complications attributable to AOM, 12% to COM, and 8% to COM with cholesteatoma [652]. The likelihood of serious complications in adults with AOM is therefore very low.
Consequences	Usually, the crew member with AOM will be off duty for 1-3 days. Likelihood of serious complications is very low, as shown above.
Unmitigated risk	In the absence of treatment or follow-up, recurrent or complicated otitis media poses an unacceptable risk to the individual's health and safety, and potentially to the crew and ship operations.
Mitigation	Prompt treatment of isolated AOM episodes with appropriate antimicrobial therapy. Specialist follow-up for recurrent AOM, COM, or complications to guide ongoing management. Temporary removal from safety-critical duties until resolution of symptoms.

[649] HOUSE HP. Otitis media; a comparative study of the results obtained in therapy before and after the introduction of the sulfonamide compounds. Arch Otolaryngol. 1946;43:371.
[650] Hafidh MA, Keogh I, Walsh RM, Walsh M, Rawluk D. Otogenic intracranial complications. a 7-year retrospective review. Am J Otolaryngol. 2006;27(6):390.
[651] Leskinen K, Jero J. Acute complications of otitis media in adults. Clin Otolaryngol. 2005;30(6):511.
[652] Leskinen K, Jero J. Acute complications of otitis media in adults. Clin Otolaryngol. 2005;30(6):511.

	Consideration of certificate restrictions or limitations based on specialist advice and regulatory criteria.
Risk assessment	Isolated cases of AOM, once treated and resolved, generally present an acceptable risk for return to duty. Persistent symptoms or complications warrant specialist evaluation and may require restrictions or limitations on duties or sailing area. Recurrent AOM or COM cases are usually considered unacceptable for unrestricted service but may be managed with appropriate restrictions and specialist oversight.

22.8.3 EAR DISORDERS

H68-95	Ear disorders: Progressive (e.g. otosclerosis)	T – Temporary inability to meet relevant hearing standards (B – Hearing requirements) and low[ii] likelihood of subsequent deterioration or impairing recurrence once treated or recovered P – Inability to meet relevant hearing standards (B – Hearing requirements) or, if treated, increased likelihood or subsequent deterioration or impairing recurrence	L – If recurrence foreseeable but unlikely and it can be detected by regular monitoring	Very low[iii] likelihood of recurrence. Progression to a level where hearing standards (B – Hearing requirement) are not met during period of certificate is very unlikely.

22.8.3.1 H80 - OTOSCLEROSIS

Reviewed 2025-12-18

Significance	Otosclerosis is characterised by abnormal bony overgrowth involving the footplate of the stapes bone in the middle ear. This pathological process impairs the stapes' ability to function as a piston, causing it to rock rather than move efficiently, eventually leading to fixation. The resulting conductive hearing loss progresses gradually, potentially reaching a maximum of approximately 60 decibels. This degree of hearing impairment can significantly affect communication and the ability to perform safety-critical tasks on board.
Possible medical incident(s)	The primary medical incident associated with otosclerosis is progressive conductive hearing loss. Surgical intervention, typically stapedectomy, may be required to restore hearing function or prevent further deterioration.
Likelihood	The natural progression of otosclerosis varies among individuals. While specific annual incidence rates of progression in seafarers are not well documented, hearing loss generally worsens over time without intervention.
Consequences	**Individual:** Hearing loss may impair communication and situational awareness, potentially compromising the seafarer's ability to perform duties safely. **Crew:** Impaired communication can affect team coordination and safety. **Ship:** Reduced operational safety may result if hearing impairment is unaddressed, particularly in safety-critical roles.

Unmitigated risk	Without treatment or appropriate hearing support, the risk posed by progressive hearing loss due to otosclerosis is unacceptable (depending on the degree of hearing loss), as it may compromise individual safety and ship operations.
Mitigation	Mitigating measures include: • Hearing amplification devices to improve auditory function. • Surgical stapedectomy to restore stapes mobility and improve hearing. • Regular specialist assessment to monitor hearing status and progression. • Consideration of certificate restrictions or limitations based on hearing capability and specialist advice, as outlined in Appendix B of the Regulations.
Mitigated risk	Following treatment or use of hearing amplification, the risk associated with otosclerosis can be reduced to an acceptable level, allowing the seafarer to safely perform duties. The mitigated risk assessment should be based on documented hearing capability and specialist recommendations. Certificates may be restricted in duration or scope accordingly.
Recommendation	Any seafarer diagnosed with otosclerosis should undergo thorough assessment by a specialist, including documentation of current hearing ability with and without amplification, and evaluation of the likely progression of hearing loss over the certificate validity period. Depending on findings, a restricted or time-limited certificate, or a declaration of unfitness, may be necessary to ensure safety.

22.8.3.2 H93.1 - TINNITUS

Reviewed 2025-12-18

Significance	Tinnitus is the perception of sound in or near the head without an external acoustic source. It may be perceived unilaterally or bilaterally, within the ears, around the head, or as a distant external noise. Commonly described sounds include buzzing, ringing, or hissing, though other noises may also be reported. The tinnitus may be continuous or intermittent. This condition can significantly affect an individual's concentration, communication, and overall well-being, potentially impacting their ability to perform safety-critical duties on board.
Possible medical incident(s)	The impact of tinnitus varies widely among individuals. Some merely perceive tinnitus without significant distress, while others experience considerable suffering and functional impairment.
Likelihood	Approximately 25% of individuals with tinnitus report worsening severity over time. Tinnitus is typically persistent rather than occasional; in one study, 74% of patients reported tinnitus presence for more than 26 days per month [653]. Chronic tinnitus rarely remits completely but often becomes less bothersome, particularly when associated with hearing loss.
Consequences	**Individual:** Tinnitus may reduce situational awareness and interfere with hearing, concentration, and sleep quality.

[653] Stouffer JL, Tyler RS. Characterization of tinnitus by tinnitus patients. J Speech Hear Disord. 1990;55(3):439.

	Crew: Impaired communication and reduced alertness may affect team performance and safety. **Ship:** Potential safety risks arise if tinnitus significantly compromises the affected seafarer's ability to perform duties.
Unmitigated risk	Without appropriate assessment and management, tinnitus may pose an unacceptable risk to the individual's health and safety, and potentially to crew and ship operations, especially if associated with hearing impairment or psychological distress.
Mitigation	Identification and treatment of any underlying causes where possible. • Behavioural therapies such as cognitive behavioural therapy (CBT) to reduce distress. • Pharmacological treatments where indicated. • Use of masking devices or sound therapy to alleviate symptoms. • Management of associated conditions such as insomnia and depression, which may exacerbate tinnitus symptoms. • Addressing any concomitant hearing loss with appropriate amplification or intervention. • Restriction in safety-critical duties could be necessary
Risk assessment	Following comprehensive assessment and appropriate management, the risk posed by tinnitus can be reduced to an acceptable level, enabling the seafarer to safely perform routine and emergency duties. Specialist evaluation is recommended to assess hearing status, symptom impact, and treatment efficacy.
Recommendation	Seafarers with tinnitus should undergo thorough assessment to identify underlying causes and evaluate hearing function. Management should include addressing associated factors such as insomnia and depression. A specialist report is advisable to guide treatment and assess fitness for duty. Any documented hearing loss should be appropriately managed to optimise functional capacity.

22.8.3.3 H91.1 - PRESBYCUSIS

Reviewed 2025-12-18

Significance	Presbycusis, or age-related hearing loss, is a prevalent cause of hearing impairment among adults worldwide [654] [655]. It is characterised by a symmetrical, progressive decline in hearing acuity over many years, predominantly affecting high-frequency sounds. The clinical presentation and progression can vary between individuals. Presbycusis significantly impacts the quality of life of millions of older adults and its prevalence is increasing in line with global population ageing [656] [657].

[654] Nelson EG, Hinojosa R. Presbycusis: a human temporal bone study of individuals with downward sloping audiometric patterns of hearing loss and review of the literature. Laryngoscope 2006; 116:1.
[655] Lin FR. Age-Related Hearing Loss. N Engl J Med 2024; 390:1505.
[656] Gates GA, Mills JH. Presbycusis. Lancet 2005; 366:1111.
[657] Tsai Do BS, Bush ML, Weinreich HM, et al. Clinical Practice Guideline: Age-Related Hearing Loss. Otolaryngol Head Neck Surg 2024; 170 Suppl 2:S1.

	The prevalence of hearing loss rises with advancing age, with up to 80% of functionally significant hearing loss occurring in older adults [658]. A population cohort study in the United States reported the prevalence of audiometrically defined hearing loss as follows [659]: 11% in individuals aged 44–54 years 25% in individuals aged 55–64 years 43% in individuals aged 65–84 years The condition is more common in men than women, potentially due to higher lifetime noise exposure among males [660] [661] [662]. Multiple factors influence the onset and severity of presbycusis, including [663] [664] [665]: • Low socioeconomic status [666] • Noise exposure [667] • Ototoxic agents such as aminoglycosides, chemotherapeutic drugs, and heavy metals • Infections • Smoking • Hypertension • Diabetes mellitus [668] [669] • Vascular disease • Immunological disorders • Hormonal factors [670] [671] • A genetic predisposition also contributes to susceptibility to age-related hearing loss [672].
Possible medical incident(s)	The hallmark of presbycusis is a progressive, symmetrical loss of high-frequency hearing over many years. Significantly asymmetric hearing loss should prompt investigation for alternative causes. Common complaints include difficulty hearing or understanding speech in noisy environments, impaired consonant discrimination, and inability to perceive high-pitched voices or sounds. Associated symptoms may include tinnitus (often described

[658] Davis AC. Epidemiological profile of hearing impairments: the scale and nature of the problem with special reference to the elderly. Acta Otolaryngol Suppl 1990; 476:23.
[659] Nash SD, Cruickshanks KJ, Klein R, et al. The prevalence of hearing impairment and associated risk factors: the Beaver Dam Offspring Study. Arch Otolaryngol Head Neck Surg 2011; 137:432.
[660] Gates GA, Cooper JC. Incidence of hearing decline in the elderly. Acta Otolaryngol 1991; 111:240.
[661] Helzner EP, Cauley JA, Pratt SR, et al. Race and sex differences in age-related hearing loss: the Health, Aging and Body Composition Study. J Am Geriatr Soc 2005; 53:2119.
[662] Gopinath B, Rochtchina E, Wang JJ, et al. Prevalence of age-related hearing loss in older adults: Blue Mountains Study. Arch Intern Med 2009; 169:415.
[663] Van Eyken E, Van Camp G, Van Laer L. The complexity of age-related hearing impairment: contributing environmental and genetic factors. Audiol Neurootol 2007; 12:345.
[664] Bao J, Ohlemiller KK. Age-related loss of spiral ganglion neurons. Hear Res 2010; 264:93.
[665] Cruickshanks KJ, Nondahl DM, Tweed TS, et al. Education, occupation, noise exposure history and the 10-yr cumulative incidence of hearing impairment in older adults. Hear Res 2010; 264:3.
[666] Dillard LK, Matthews LJ, Dubno JR. Sex- and Race-Specific Prevalence of Hearing Loss Across the Adult Lifespan and Associated Factors. JAMA Otolaryngol Head Neck Surg 2025; 151:576.
[667] Dillard LK, Humes LE, Matthews LJ, Dubno JR. Noise Exposure History and Age-Related Changes to Hearing. JAMA Otolaryngol Head Neck Surg 2025; 151:228.
[668] Uchida Y, Sugiura S, Ando F, et al. Diabetes reduces auditory sensitivity in middle-aged listeners more than in elderly listeners: a population- based study of age-related hearing loss. Med Sci Monit 2010; 16:PH63.
[669] Fowler PD, Jones NS. Diabetes and hearing loss. Clin Otolaryngol Allied Sci 1999; 24:3.
[670] Hultcrantz M, Simonoska R, Stenberg AE. Estrogen and hearing: a summary of recent investigations. Acta Otolaryngol 2006; 126:10.
[671] Frisina RD, Bazard P, Bauer M, et al. Translational implications of the interactions between hormones and age-related hearing loss. Hear Res 2021; 402:108093.
[672] Ohlemiller KK. Mechanisms and genes in human strial presbycusis from animal models. Brain Res 2009; 1277:70.

	as roaring, cricket-like, or bell-like sounds), vertigo, and disequilibrium, which can increase the risk of falls.
General likelihood	Presbycusis is highly prevalent in older adults, with the likelihood increasing steadily with age as detailed above. The progression is gradual but persistent.
Consequences	**Individual:** Hearing loss can lead to communication difficulties, social isolation, reduced self-esteem, depression, and may be associated with cognitive decline including dementia. Balance disturbances may increase fall risk. **Crew**: Impaired communication and situational awareness may compromise team coordination and safety. **Ship:** Operational safety may be affected if hearing impairment is unaddressed, particularly in safety-critical roles.
Unmitigated risk	Without appropriate recognition and management, presbycusis poses an unacceptable risk to the individual's health and safety, as well as to crew and ship operations, due to impaired communication and increased risk of accidents.
Mitigation	• Audiometric assessment and monitoring of hearing status. • Use of hearing amplification devices where indicated. • Management of contributing factors such as noise exposure and ototoxic medications. • Rehabilitation and counselling to address communication difficulties and psychosocial impact. • Consideration of certificate restrictions or limitations based on hearing ability and specialist advice.
Mitigated risk	With appropriate hearing support and management, the risk associated with presbycusis can be reduced to an acceptable level, enabling safe performance of duties. Individualised assessment and specialist input are essential to determine fitness for service and any necessary restrictions.
Recommendation	Seafarers with presbycusis should undergo comprehensive audiological evaluation and management. Significant asymmetric hearing loss requires further investigation to exclude other pathologies. Attention should be given to the psychosocial impact of hearing loss, including depression and cognitive decline. Documentation of hearing status and management plans should inform certification decisions.

22.8.4 MÉNIÈRE'S DISEASE AND OTHER FORMS OF CHRONIC OR RECURRENT IMPAIRING VERTIGO

H 81	Ménière's disease and other forms of chronic or recurrent impairing vertigo. Inability to balance, causing loss of mobility and nausea (C – Physical capability requirements)	T – During acute phase P – Frequent attacks leading to impairment	R – If not capable of performing all tasks, but can perform safety-critical duties or mitigating measures have been implemented R, L – If frequent specialist surveillance required	Low likelihood of impairing effects while at sea

22.8.4.1 H81 MÉNIÈRE'S DISEASE

Reviewed 2025-12-18

Significance	Ménière's disease can manifest at any age but most commonly presents between 20 and 40 years of age. It affects both sexes equally and may involve one or both ears. Reported incidence rates vary widely, ranging from 4.3 to 100 cases per 100,000 population, with a prevalence estimated at approximately 218 per 100,000 [673] [674]. The incidence of bilateral involvement varies considerably in the literature, reported between 2% and 73% [675]. The disease course is highly variable, with patients experiencing cycles of active symptoms interspersed with periods of remission. This condition is significant to maritime service as it impairs balance and physical capability, potentially causing loss of mobility and nausea, which can compromise the safety of the individual, other crew members, and ship operations.
Possible medical incident(s)	The hallmark symptom is episodic vertigo, which may increase the risk of falls and physical incapacitation. Sensorineural hearing loss is common, typically fluctuating and initially affecting lower frequencies. Over an 8 to 10-year period, hearing loss often progresses to permanent impairment across all frequencies.
Likelihood	Vertigo attacks characteristically last from 20 minutes to 24 hours. In one study, mean attack duration was 4.6 hours [676]. Approximately two-thirds of patients experience clustered attacks, while the remainder have sporadic episodes. The frequency of attacks may decrease over time [677]. The natural history of MD is varied and can be unpredictable. In many cases, the frequency of attacks stabilizes and can decline or almost completely resolve after two to five years [678] [679] [680] [681]. However, a subset of patients continues to experience severe symptoms for decades after diagnosis [682]. Hearing loss typically worsens or persists over time.

[673] Wladislavosky-Waserman P, Facer GW, Mokri B, et al. Meniere's disease: a 30-year epidemiologic and clinical study in Rochester, MN, 1951-1980. Laryngoscope. 1984;94:1098-1102.
[674] da Costa SS, de Sousa LC, Piza MR. Meniere's disease: overview, epidemiology, and natural history. Otolaryngol Clin North Am. 2002;35:455-495.
[675] Huppert D, Strupp M, Brandt T. Long-term course of Menière's disease revisited. Acta Otolaryngol. 2010;130:644-651.
[676] De Ravin E, Quimby AE, Bartellas M, et al. An Update on the Epidemiology and Clinicodemographic Features of Meniere's Disease. Laryngoscope 2024; 134:3310.
[677] Perez-Garrigues H, Lopez-Escamez JA, Perez P et al. Time course of episodes of definitive vertigo in Meniere's disease: Arch Otolaryngol Head Neck Surg. 2008;134(11):1149
[678] Huppert D, Strupp M, Brandt T. Long-term course of Menière's disease revisited. Acta Otolaryngol 2010; 130:644.
[679] Pyykkö I, Zou J, Vetkas N. Changes in symptom pattern in Meniere's disease by duration: the need for comprehensive management. Front Neurol 2024; 15:1496384.
[680] Perez-Garrigues H, Lopez-Escamez JA, Perez P, et al. Time course of episodes of definitive vertigo in Meniere's disease. Arch Otolaryngol Head Neck Surg 2008; 134:1149.
[681] Silverstein H, Smouha E, Jones R. Natural history vs. surgery for Menière's disease. Otolaryngol Head Neck Surg 1989; 100:6.
[682] Havia M, Kentala E. Progression of symptoms of dizziness in Ménière's disease. Arch Otolaryngol Head Neck Surg 2004; 130:431.

	Early in the presentation, hearing loss usually fluctuates and initially affects only the lower frequencies [683]. Hearing loss typically progresses and often results in permanent hearing loss at all frequencies in the affected ear over the subsequent 8 to 10 years. Episodes of hearing loss are typically associated with intense ipsilateral aural fullness or head pressure [684]. Tinnitus is usually described as ringing or buzzing in the ear. It may be fluctuating or constant, with variable pitch and intensity. It may be present only during episodes of vertigo or hearing loss or occur independently of other symptoms.
Consequences	**Individual:** Vertigo attacks are incapacitating, rendering the affected seafarer unable to perform duties during episodes. Progressive hearing loss further impairs communication and situational awareness. **Crew:** Other crew members may need to assume additional responsibilities during incapacitation episodes, increasing workload and operational risk. **Ship:** The risk of falls, injury, and operational disruption is elevated during active disease phases.
Unmitigated risk	Without effective mitigation, the risk posed by Ménière's disease is unacceptable due to the unpredictability and severity of vertigo attacks and progressive hearing loss.
Mitigation	Therapeutic options are limited and often have modest efficacy. Management focuses on symptom control and specialist surveillance. Mitigating measures may include restrictions on duties, temporary removal from safety-critical roles during active phases, and close medical monitoring.
Mitigated risk	Risk assessment must be individualised based on specialist advice, considering the frequency and severity of attacks and the degree of hearing loss. With appropriate management and restrictions, some individuals may be fit for limited duties or specific roles with mitigations in place.
Recommendation	Seafarers diagnosed with Ménière's disease require thorough specialist evaluation and ongoing surveillance.

22.8.4.2 H81.1 - BENIGN PAROXYSMAL POSITIONAL VERTIGO (BPPV)

Reviewed 2025-18-12

Significance	Benign Paroxysmal Positional Vertigo (BPPV) is a common vestibular disorder characterised by episodes of vertigo, typically caused by canalithiasis—displacement of otoliths within the semicircular canals. Posterior canal BPPV is idiopathic in approximately 35% of cases. A history of prior head trauma, including relatively minor injuries or whiplash, is present in around 15% of affected individuals [685] [686].

[683] Hoa M, Friedman RA, Fisher LM, Derebery MJ. Prognostic implications of and audiometric evidence for hearing fluctuation in Meniere's disease. Laryngoscope 2015; 125 Suppl 12:S1.
[684] Saeed SR. Fortnightly review. Diagnosis and treatment of Ménière's disease. BMJ 1998; 316:368.
[685] Hughes CA, Proctor L. Benign paroxysmal positional vertigo. Laryngoscope 1997; 107:607.
[686] Dispenza F, De Stefano A, Mathur N, et al. Benign paroxysmal positional vertigo following whiplash injury: a myth or a reality? Am J Otolaryngol 2011; 32:376.

	This condition is significant due to its potential to impair a seafarer's ability to perform job tasks safely and effectively, as vertigo episodes may compromise balance and spatial orientation, thereby posing a risk to the health and safety of the individual, other crew members, passengers, and the safe operation of the vessel.
Possible medical incident(s)	BPPV manifests as recurrent, brief episodes of vertigo lasting typically less than one minute. These episodes are provoked by specific head movements and may be accompanied by nausea and vomiting.
Likelihood	Episodes recur periodically for weeks to months without therapy [687]. Although the natural history is not extensively studied, it is widely accepted that untreated BPPV episodes usually resolve spontaneously within days to weeks, though sometimes the duration may be longer [688]. In a case series of 108 untreated patients, symptoms resolved on average after 39 days for posterior canal BPPV and 16 days for horizontal canal BPPV [689]. Patients with BPPV due to certain etiologies such as ischemia, vestibular neuronitis, or trauma may have with a more prolonged course than those with idiopathic BPPV [690] [691]. Recurrence is common: one longitudinal study of 50 patients reported recurrence rates of 18% at one year and 30% at three years [692]; another study found a 35% recurrence rate at five years [693]. Recurrence was more likely in patients older than 40 or with more than three years of symptoms prior to treatment. Patients with horizontal canal BPPV (HC-BPPV) had a higher recurrence rate than those with posterior canal BPPV. Another retrospective five-year review of 118 patients noted a similar recurrence rate of 33 percent for posterior canal BPPV [694]. BPPV that occurs following trauma may be more refractory to treatment and more recurrent than idiopathic BPPV, although this is not uniformly observed [695] [696] [697]. One large series found that older age and a history of vestibular neuropathy were additional risk factors for recurrence [698]. **Likelihood level:** Moderate to High (5–30% per year depending on subgroup and follow-up duration)
Consequences	Vertigo episodes may significantly interfere with the seafarer's ability to perform both routine and emergency duties, particularly those requiring

[687] Brandt T, Daroff RB. Physical therapy for benign paroxysmal positional vertigo. Arch Otolaryngol 1980; 106:484.
[688] Zucca G, Valli S, Valli P, et al. Why do benign paroxysmal positional vertigo episodes recover spontaneously? J Vestib Res 1998; 8:325.
[689] Imai T, Ito M, Takeda N, et al. Natural course of the remission of vertigo in patients with benign paroxysmal positional vertigo. Neurology 2005; 64:920.
[690] Lee NH, Ban JH, Lee KC, Kim SM. Benign paroxysmal positional vertigo secondary to inner ear disease. Otolaryngol Head Neck Surg 2010; 143:413.
[691] Ahn SK, Jeon SY, Kim JP, et al. Clinical characteristics and treatment of benign paroxysmal positional vertigo after traumatic brain injury. J Trauma 2011; 70:442.
[692] Sakaida M, Takeuchi K, Ishinaga H, et al. Long-term outcome of benign paroxysmal positional vertigo. Neurology 2003; 60:1532.
[693] Rashad UM. Long-term follow up after Epley's manoeuvre in patients with benign paroxysmal positional vertigo. J Laryngol Otol 2009; 123:69.
[694] Kansu L, Avci S, Yilmaz I, Ozluoglu LN. Long-term follow-up of patients with posterior canal benign paroxysmal positional vertigo. Acta Otolaryngol 2010; 130:1009.
[695] Ahn SK, Jeon SY, Kim JP, et al. Clinical characteristics and treatment of benign paroxysmal positional vertigo after traumatic brain injury. J Trauma 2011; 70:442.
[696] Kansu L, Avci S, Yilmaz I, Ozluoglu LN. Long-term follow-up of patients with posterior canal benign paroxysmal positional vertigo. Acta Otolaryngol 2010; 130:1009.
[697] Gordon CR, Levite R, Joffe V, Gadoth N. Is posttraumatic benign paroxysmal positional vertigo different from the idiopathic form? Arch Neurol 2004; 61:1590.
[698] Prokopakis E, Vlastos IM, Tsagournisakis M, et al. Canalith repositioning procedures among 965 patients with benign paroxysmal positional vertigo. Audiol Neurootol 2013; 18:83.

	balance, coordination, and rapid response. This impairment can increase the risk of falls, injuries, and operational errors, thereby compromising individual safety, crew safety, and the safe operation of the ship.
Unmitigated risk	Without treatment or mitigating measures, the risk posed by BPPV episodes is considered unacceptable due to the unpredictable nature of vertigo attacks and their potential impact on safety-critical tasks.
Mitigation	Effective treatment is available, primarily through canalith repositioning manoeuvres such as the Epley or Semont manoeuvres, which typically resolve symptoms rapidly and reduce recurrence risk. The seafarer's medical practitioner may impose restrictions on certificate validity duration, job position, duties, or sailing area as necessary, in accordance with the criteria outlined in the Regulations. Cases requiring additional or exceptional restrictions should be referred to the appellate body for consideration. Ongoing specialist evaluation may be warranted in recurrent or refractory cases.
Risk assessment	Following appropriate treatment and consideration of any necessary restrictions, the mitigated risk is generally acceptable, allowing the seafarer to be deemed fit for service, potentially with time-limited certification or specific job/task limitations. If the mitigated risk remains unacceptable, a temporary declaration of unfitness may be appropriate pending expected recovery within two years; otherwise, a permanent declaration of unfitness should be considered.
Recommendation	Specialist assessment is recommended for recurrent or treatment-resistant cases. Where uncertainty exists, referral to the appellate body is advised. Consideration should be given to the potential need for re-evaluation following episodes of head trauma or vestibular neuropathy. Further research into the long-term prognosis and recurrence prevention of BPPV in seafarers is encouraged.

22.8.4.3 H81 – DISORDERS OF VESTIBULAR FUNCTION

Reviewed 2025-12-18

Significance	Vestibular neuritis, also referred to as vestibular neuronitis, labyrinthitis, neurolabyrinthitis, or acute peripheral vestibulopathy, is a benign, self-limiting disorder of the vestibular system [699]. It is characterised by acute onset of vertigo and associated symptoms, with complete recovery in the majority of cases. The condition is significant for seafarers as it may temporarily impair balance and spatial orientation, thereby affecting the ability to perform safety-critical tasks on board. Although generally resolving without long-term sequelae, the acute phase poses a risk to the health and safety of the individual, other crew members, and the safe operation of the vessel.

[699] Baloh RW. Clinical practice. Vestibular neuritis. N Engl J Med 2003; 348:1027.

Possible medical incident(s)	Typical medical incidents include sudden onset vertigo, nausea, vomiting, and gait impairment. These symptoms can severely disrupt normal functioning and increase the risk of falls or accidents, particularly during emergency or operational duties.
Likelihood	Severe symptoms of vestibular neuritis typically resolve within one to two days, followed by a more gradual improvement and eventual return to equilibrium. The acute illness rarely lasts more than a few days; however, residual imbalance and nonspecific dizziness may persist for several months [700]. Recurrence of vestibular neuritis is uncommon; in a longitudinal study of 103 patients followed over ten years, only two cases of recurrence were reported [701]. Nevertheless, there is evidence of a 15% risk of subsequent development of benign paroxysmal positional vertigo (BPPV) [702] and a 10% risk of panic attacks within two years following an episode [703]. **Likelihood level**: Low to Moderate (approximately 2–10% per year for sequelae such as BPPV and panic attacks).
Consequences	During acute episodes, symptoms may significantly impair the seafarer's ability to perform routine and emergency tasks, increasing the risk of injury and operational errors. Persistent imbalance or dizziness, even if mild, may affect safety-critical functions.
Unmitigated risk	Without appropriate management, the unmitigated risk during the acute phase is unacceptable due to the severity of symptoms and potential for accidents. The risk to the individual's health and safety, as well as to crew and ship operations, must be carefully considered.
Mitigation	Immediate mitigation involves declaring the affected seafarer temporarily unfit for duty until full resolution of symptoms. Supportive care and, if necessary, specialist evaluation should be provided. Following recovery, no ongoing restrictions are typically required unless complications arise. The seafarer's medical practitioner may impose limitations on certificate validity, duties, or sailing area in accordance with regulatory criteria.
Mitigated risk	Following resolution of the acute episode and appropriate medical clearance, the mitigated risk is generally acceptable, permitting return to full duties. If sequelae such as BPPV or panic attacks develop, further assessment and possible restrictions may be necessary. Persistent or recurrent symptoms may warrant temporary or permanent declarations of unfitness depending on prognosis. Risk assessments should be individualized, considering the safety of the seafarer, crew, and vessel operations. Individualized.
Recommendation	Seafarers experiencing an acute attack of vestibular neuritis should be declared temporarily unfit until symptom resolution. Long-term follow-up is advised to monitor for potential development of BPPV or panic disorders. Specialist referral is recommended for persistent or recurrent symptoms. Documentation

[700] Bronstein AM, Dieterich M. Long-term clinical outcome in vestibular neuritis. Curr Opin Neurol 2019; 32:174.
[701] Huppert D, Strupp M, Theil D, et al. Low recurrence rate of vestibular neuritis: a long-term follow-up. Neurology 2006; 67:1870.
[702] Baloh RW, Honrubia V, Jacobson K. Benign positional vertigo: clinical and oculographic features in 240 cases. Neurology 1987; 37:371.
[703] Godemann F, Schuller J, Uhlemann H, et al. Psychodynamic vulnerability factors in the development of panic disorders--a prospective trial in patients after vestibular neuritis. Psychopathology 2009; 42:99.

	of clinical course and treatment outcomes should be maintained to support certification decisions.

22.9 I00-99 - DISEASES OF THE CIRCULATORY SYSTEM

22.9.1 CONGENITAL AND VALVE DISEASE OF HEART

I 05-08	Congenital and valve disease of heart (including surgery for these conditions) Heart murmurs not previously investigated Likelihood of progression, limitations on exercise capacity	T – Until investigated and, if required, treated P – If exercise tolerance reduced or episodes of incapacity occur or if on anticoagulants or if permanent high likelihood of impairing event	R – Near-coastal waters if case-by-case assessment indicates either likelihood of acute complications or rapid progression L – If frequent surveillance required	Heart murmurs – where unaccompanied by other heart abnormalities and considered benign by a specialist cardiologist following examination Other conditions – case-by-case assessment based on cardiologist advice

22.9.1.1 I06, I35, Q25 - AORTIC STENOSIS (AS)

Reviewed 2025-12-18

Significance	Aortic valve sclerosis is characterised by thickening and calcification of the aortic valve without a significant transvalvular gradient, defined as an aortic jet velocity less than 2 m/sec. Aortic stenosis (AS) is diagnosed when the antegrade velocity across the abnormal valve is at least 2 m/sec. The severity of AS is classified by symptoms, valve anatomy, haemodynamics, and left ventricular function [704]. The **natural history of AS** typically begins with a prolonged asymptomatic phase. Symptoms generally do not manifest until the stenosis becomes severe, defined by a valve area less than 1.0 cm², jet velocity exceeding 4.0 m/sec, and/or a mean transvalvular gradient above 40 mmHg. However, symptom onset varies; some patients develop symptoms earlier, especially if concomitant aortic regurgitation is present. Serial haemodynamic measurements alone do not reliably predict symptom onset. Most patients develop symptoms prior to left ventricular systolic dysfunction. In some cases, systolic myocardial function declines before symptoms appear, reducing the left ventricle's capacity to generate pressure and shorten against

Stages of aortic stenosis
Mild stenosis
Aortic valve area > 1.5 cm^2
Mean pressure gradient < 25 mmHg
Aortic V_{max} < 3 m/sec
Moderate stenosis
Aortic valve area 1.0-1.5 cm^2
Mean pressure gradient 25-40 mmHg
Aortic V_{max} 3-4 m/sec
Severe stenosis
Aortic valve area < 1.0 cm^2
Mean pressure gradient > 40 mmHg
Aortic V_{max} > 4 m/sec

[704] N M Rajamannan, B Gersh, R O Bonow. Calcific aortic stenosis: from bench to the bedside-emerging clinical and cellular concepts. Heart 2003;89:801-805

	load. This leads to left ventricular failure, decreased stroke volume and cardiac output, and ultimately heart failure. Elevated left ventricular pressure may also cause or worsen mitral regurgitation. This progression poses significant risks to the seafarer's health and safety, as well as to crew and vessel operations.
Possible medical incident(s)	**Early Symptoms:** • Dyspnoea on exertion • Reduced exercise tolerance • Exertional dizziness or syncope • Exertional angina **Severe Aortic Stenosis:** • Lower threshold for the above symptoms • Pulmonary hypertension • Sudden cardiac death **Progression:** The rate of progression and time to symptom onset vary widely among individuals. Risk factors for rapid progression in asymptomatic patients include: • Increased aortic jet velocity and reduced valve area • Degree of valve calcification • Older age • Male gender • Underlying cause of AS • Hypercholesterolemia • Renal insufficiency • Hypercalcemia • Smoking • Metabolic syndrome • Diabetes mellitus **Post-Valve Replacement Complications:** • Thromboembolism • Valve obstruction • Valve and paravalvular regurgitation • Bleeding due to antithrombotic therapy • Infective endocarditis • Hemolytic anaemia • Structural valve deterioration • Patient-prosthesis mismatch
Likelihood	Dyspnoea occurs in approximately 60% of patients, chest pain in 50%, often indistinguishable from coronary artery disease. Syncope, a classical symptom, occurs in about 40% and may result from arrhythmia or hypotension [705]. **UNTREATED AORTIC STENOSIS:**

[705] Lombard TJ, Selzer A. Valvular aortic stenosis. A clinical and hemodynamic profile of patients. Ann Intern Med. 1987;106:292-298

In cases of severe AS, the mortality is 50% in 2 years if untreated[706].
Mortality dramatically increases after development of cardiac symptoms[707] [708] [709] [710] [711] [712].

Historical data (1913–1970) on survival after symptom onset without valve replacement indicate [713]:
After onset of heart failure: 0.5-2.8 years
After onset of syncope: 0.8-3.8 years
After onset of angina: 2-4.7 years
NYHA class III-IV had a two-year mortality rate of 24-69%.

In a contemporary observational study of symptomatic patient's ineligible for valve replacement, 32% died within a median follow-up of one year despite medical treatment including balloon aortic valvuloplasty [714].
Pulmonary hypertension prevalence in catheterised patients: none in 35%, mild to moderate in 50%, severe in 15% [715].

AORTIC PROSTHETIC VALVES
Mortality and complication rates are higher in adults under 65 years compared to older patients [716].
In a cohort of 450 adults (mean age 53±9 years) undergoing elective mechanical aortic valve replacement (AVR), follow-up showed [717].

Follow-up after:	1 year	5 years	10 years
Mortality	2%	5%	13%
Prosthetic valve dysfunction	1%	5%	9%
Reoperation	-	-	18%
Major haemorrhage	2%	4%	10%

For bioprosthetic AVR in patients under 60 years[718]:

Follow-up after:	5 years	10 years	15 years
Mortality	11%	21%	43%

[706] Nishimura RA, Otto CM, Bonow RO, et al. 2014 AHA/ACC guideline for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2014; 63:e57.
[707] Chizner MA, Pearle DL, deLeon AC Jr. The natural history of aortic stenosis in adults. Am Heart J 1980; 99:419.
[708] Ross J Jr, Braunwald E. Aortic stenosis. Circulation 1968; 38:61.
[709] Schwarz F, Baumann P, Manthey J, et al. The effect of aortic valve replacement on survival. Circulation 1982; 66:1105.
[710] Kitai T, Honda S, Okada Y, et al. Clinical outcomes in non-surgically managed patients with very severe versus severe aortic stenosis. Heart 2011; 97:2029.
[711] Leon MB, Smith CR, Mack M, et al. Transcatheter aortic-valve implantation for aortic stenosis in patients who cannot undergo surgery. N Engl J Med 2010; 363:1597.
[712] Ben-Dor I, Pichard AD, Gonzalez MA, et al. Correlates and causes of death in patients with severe symptomatic aortic stenosis who are not eligible to participate in a clinical trial of transcatheter aortic valve implantation. Circulation 2010; 122:S37.
[713] Turina J, Hess O, Sepulcri F, Krayenbuehl HP. Spontaneous course of aortic valve disease. Eur Heart J 1987; 8:471.
[714] Ben-Dor I, Pichard AD, Gonzalez MA, et al. Correlates and causes of death in patients with severe symptomatic aortic stenosis who are not eligible to participate in a clinical trial of transcatheter aortic valve implantation. Circulation 2010; 122:S37.
[715] Faggiano P, Antonini-Canterin F, Ribichini F, et al. Pulmonary artery hypertension in adult patients with symptomatic valvular aortic stenosis. Am J Cardiol 2000; 85:204.
[716] Mustafa Zakkar, Vito Domanico Bruno, Mr, Alexandru Ciprian Visan, Stephanie Curtis, Gianni Angelini, Emmanuel Lansac, and Serban Stoica. Surgery for Young Adults With Aortic Valve Disease not Amenable to Repair. Front Surg. 2018; 5: 18. Published online 2018 Mar 2. doi: 10.3389/fsurg.2018.00018
[717] Bouhout I, Stevens LM, Mazine A, Poirier N, Cartier R, Demers P, et al. Long-term outcomes after elective isolated mechanical aortic valve replacement in young adults. J Thorac Cardiovasc Surg (2014) 148(4):1341–6.10.1016/j.jtcvs.2013.10.064
[718] Forcillo J, El Hamamsy I, Stevens LM, Badrudin D, Pellerin M, Perrault LP, et al. The perimount valve in the aortic position: twenty-year experience with patients under 60 years old. Ann Thorac Surg (2014) 97(5):1526–32.10.1016/j.athoracsur.2014.02.019

	<table><tr><td>Adverse cardiac events</td><td>11%</td><td>13%</td><td>25%</td></tr><tr><td>Valve dysfunction</td><td>3%</td><td>16%</td><td>43%</td></tr></table> **COMPLICATIONS:** **Thromboembolism** and bleeding due to antithrombotic therapy are the most common complications. Mechanical valve thrombosis incidence: 0.3–1.3% per patient-year [719]. Thromboembolic events including systemic emboli: 0.7–6% per patient-year, higher with subtherapeutic anticoagulation. Higher rate apply if the individual is receiving subetherapeutic antcoagulant therapy [720]. Embolisation rates: 4% per year without antithrombotic therapy, 2% with antiplatelet therapy, 1% with vitamin K antagonists [721]. Bioprosthetic valve thromboembolism: 0.2–3.3% per year, predominantly cerebrovascular events [722] - the majority presenting as cerebrovascular events[723] [724]. **Structural failure** necessitating replacement occurs in approximately 30% of heterograft and 10–20% of homograft valves within 10–15 years [725] [726] [727]. **Subclinical intravascular haemolysis** is common; severe haemolytic anaemia is rare [728] [729] [730]. **Infective endocarditis occurs** in 3–6% of patients [731] [732] [733]. **TAVI vs SAVR** *Transcatheter aortic valve implantation (TAVI)* is preferred when *surgical aortic valve replacement (SAVR)* is contraindicated or considered high risk. Prognosis after TAVI is generally poorer than after SAVR.
Consequences	**Individual:** Severe symptoms may necessitate urgent hospital treatment. **Crew:** Increased burden due to caring for ill seafarers, task reallocation, and risks associated with medical evacuation**.**

[719] Horstkotte D, Burckardt D. Prosthetic valve thrombosis. J Heart Valve Dis 19954141–153
[720] Deviri E, Sareli P, Wisenbaugh T, Cronje SL. Obstruction of mechanical heart valve prostheses: clinical aspects and surgical management. J Am Coll Cardiol 1991; 17:646.
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[722] Devendra Saksena, Yugal K. Mishra,corresponding author S. Muralidharan, Vivek Kanhere, Pankaj Srivastava, C. P. Srivastava, and VHD India consensus committee. Follow-up and management of valvular heart disease patients with prosthetic valve: a clinical practice guideline for Indian scenario. Indian J Thorac Cardiovasc Surg. 2019 Jan; 35(Suppl 1): 3–44.Published online 2019 Jan 28. doi: 10.1007/s12055-019-00789-z. PMCID: PMC7525528.
[723] Edmunds LH Jr. Thromboembolic complications of current cardiac valvular prostheses. Ann Thorac Surg 1982;34:96-106
[724] Burchfiel CM, Hammermeister KE, Krause-Steinrauf H, et al. Left atrial dimension and risk of systemic embolism in patients with a prosthetic heart valve. J Am Coll Cardiol 1990;15:32-41
[725] Yacoub M, Rasmi NRH, Sundt TM, et al. Fourteen-year experience with homovital homografts for aortic valve replacement. J Thorac Cardiovasc Surg 1995;110:186-194
[726] O'Brien MF, Stafford EG, Gardner MAH, et al. Allograft aortic valve replacement: long-term follow-up. Ann Thorac Surg 1995;60:Suppl:S65-S70
[727] Grunkemeier GL, Jamieson WRE, Miller DC, Starr A. Actuarial versus actual risk of porcine structural valve deterioration. J Thorac Cardiovasc Surg 1994;108:709-718
[728] Crexells C, Aerichide N, Bonny Y, Lepage G, Campeau L. Factors influencing hemolysis in valve prosthesis. Am Heart J 1972;84:161-170
[729] Jegaden O, Eker A, Delahaye F, et al. Thromboembolic risk and late survival after mitral valve replacement with the St. Jude Medical valve. Ann Thorac Surg 1994;58:1721-1728
[730] Ibrahim M, O'Kane H, Cleland J, Gladstone D, Sarsam M, Patterson C. The St. Jude Medical prosthesis: a thirteen-year experience. J Thorac Cardiovasc Surg 1994;108:221-230
[731] Calderwood SB, Swinski LA, Waternaux CM, Karchmer AW, Buckley MJ. Risk factors for the development of prosthetic valve endocarditis. Circulation 1985;72:31-37
[732] Threlkeld MG, Cobbs CG. Infectious disorders of prosthetic valves and intravascular devices. In: Mandell GL, Bennett JE, Dolin R, eds. Mandell, Douglas and Bennett's principles and practice of infectious diseases. 4th ed. Vol. 1. New York: Churchill Livingstone, 1995:783-93
[733] Wilson WR, Danielson GK, Giuliani ER, Geraci JE. Prosthetic valve endocarditis. Mayo Clin Proc 1982;57:155-161

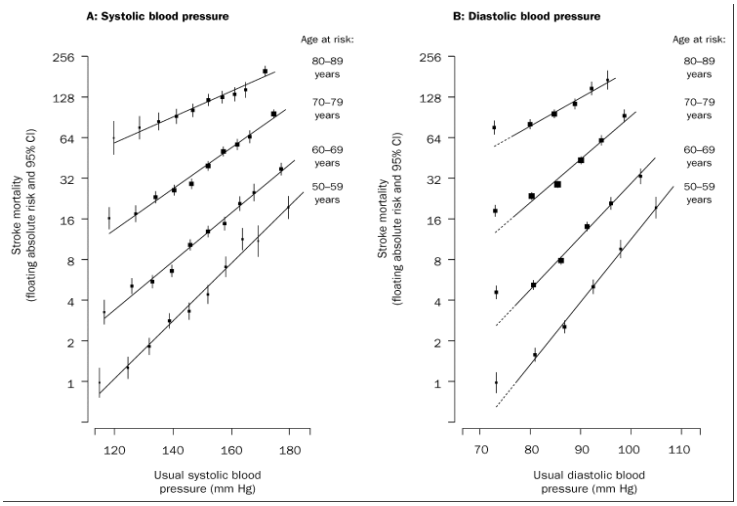
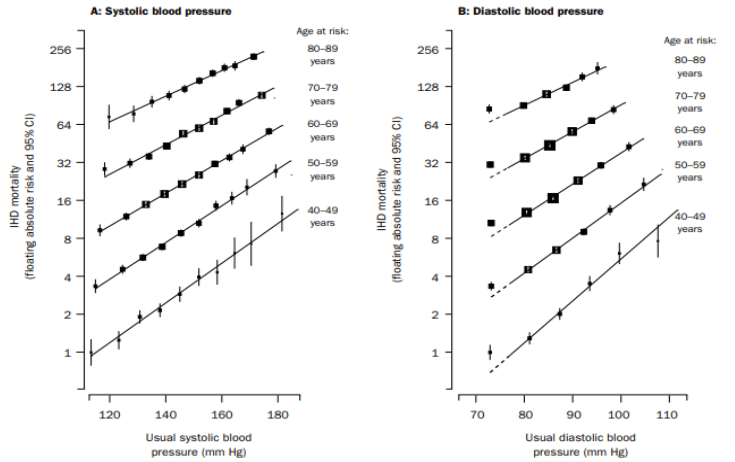
	Ship: Potential for voyage diversion, hazardous medical evacuations, crew overburden, replacement logistics in port, and operational delays.
Unmitigated risk	Without appropriate treatment and monitoring, the unmitigated risk is unacceptable due to the high likelihood of severe complications and mortality, posing significant threats to individual health, crew safety, and vessel operations.
Mitigation	Appropriate medical treatment including surgical or transcatheter valve replacement and regular follow-up. Restrictions on sailing area and job duties as necessary. Availability of helicopter evacuation (HELIVAC) for emergencies. Avoidance of sole responsibility in critical operational roles.
Mitigated risk	With effective treatment and adherence to restrictions, the risk to the individual, crew, and may be acceptable. Risk assessments should be individualized and regularly reviewed.
Recommendation	Seafarers with aortic stenosis require comprehensive cardiovascular evaluation and management. Early identification and timely intervention are essential to reduce morbidity and mortality. Post-valve replacement patients should be monitored for complications. Restrictions on duties and trade areas should be applied as clinically indicated. Specialist cardiology input and multidisciplinary management are recommended.

22.9.2 I10-15 HYPERTENSION

I 10-15	Hypertension. Increased likelihood of ischaemic heart disease, eye and kidney damage and stroke. Possibility of acute hypertensive episode.	T – normally if > 160 systolic or > 100 diastolic mmHg until investigated and treated in accordance with national or international guidelines for hypertension management. P – if persistently > 160 systolic or > 100 diastolic mmHg with or without treatment	L – If additional surveillance needed to ensure level remains within national guideline limits	If treated in accordance with national guidelines and free from impairing effects from condition or medication

Reviewed 2026-01-02

Significance	Hypertension is usually asymptomatic. It is primarily a risk factor for late complications and acute medical incidents rather than an illness that manifests with early symptoms.
Possible medical incident(s)	• Heart failure • Ischaemic stroke • Intracerebral haemorrhage • Ischaemic heart disease

	• Chronic kidney disease • Reduced physical capacity due to cardiovascular complications
Likelihood	**Stroke mortality:** There is a strong, continuous relationship between usual blood pressure and stroke mortality at all ages, with no threshold within the range of usual systolic blood pressure above 115 mmHg or diastolic blood pressure above 75 mmHg [734]:  **Ischaemic heart disease (IHD) mortality** Usual blood pressure levels are strongly and directly related to IHD mortality [735]:  **Other vascular mortality:** Both systolic and diastolic blood pressure are strongly and directly associated with vascular mortality.
Consequences	**Individual:** From minor to serious.

[734] Prospective Studies Collaboration. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. Lancet VOLUME 360, ISSUE 9349, P1903-1913, DECEMBER 14, 2002. DOI:https://doi.org/10.1016/S0140-6736(02)11911-8.

[735] Prospective Studies Collaboration. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. Lancet VOLUME 360, ISSUE 9349, P1903-1913, DECEMBER 14, 2002. DOI:https://doi.org/10.1016/S0140-6736(02)11911-8.

	Crew: From minor to significant. **Ship:** From minor to significant.
Unmitigated risk	From acceptable to not acceptable, depending on severity and control of blood pressure.
Mitigation	Appropriate treatment and follow-up in accordance with national and international hypertension guidelines. Restrictions and limitations as indicated in Attachment E to the Regulations. Regular monitoring to ensure blood pressure remains within acceptable limits.
Risk assessment	From acceptable to not acceptable.

22.9.3 CARDIAC EVENT EG CORONARY HEART DISEASE, MYOCARDIAL INFARCTION ETC

I 20-25	Cardiac event, e.g. myocardial infarction, ECG evidence of past myocardial infarction or newly recognized left bundle-branch block, angina, cardiac arrest, coronary artery bypass grafting, coronary angioplasty. Acute impairment or exercise limitation. Problems of managing repeat cardiac event at sea.	T – For three months after initial investigation and treatment, longer if symptoms not resolved P – If criteria for issue of medical certificate not met and further reduction of likelihood of recurrence improbable	L – If excess likelihood of recurrence is very low and fully compliant with risk reduction recommendations and no relevant co-morbidity: Issue six-month medical certificate initially and then annual medical certificate R, L – If likelihood of recurrence is low, restricted to: – no lone working or solo watchkeeping; and – operations in near-coastal waters, unless working on vessel with ship's doctor: issue six-month medical certificate initially and then annual medical certificate. R, L – If likelihood of recurrence is moderate and asymptomatic. Able to meet the physical requirements of their normal and emergency duties: – no lone working or solo watchkeeping; and – operating within one hour of port, unless working on vessel with ship's doctor. Case-by-case assessment Annual review.	Not applicable.

Reviewed 2026-01-02

Significance	Ischaemic Heart Disease (IHD) remains a major cause of acute incapacity and sudden, potentially life-threatening events. For seafarers, the condition is of particular concern because: • Acute coronary syndromes may occur without warning, including in younger individuals, and may rapidly progress to myocardial infarction. • Silent myocardial ischaemia is common, reducing the likelihood that early symptoms will prompt medical attention.

	• The maritime environment limits access to advanced diagnostics and emergency intervention, increasing the consequences of any cardiac event. • Recurrent events, restenosis after percutaneous coronary intervention. (PCI), graft failure after coronary artery bypass grafting (CABG), and stent thrombosis all carry a measurable likelihood within the validity period of a medical certificate. Untreated or recurrent IHD may therefore pose a risk to the health and safety of the individual seafarer, to other crew members, and to the safe operation of the vessel.
Possible medical incident(s)	Medical incidents relevant to maritime service include: • Acute coronary syndrome (ACS), including ST-elevation myocardial infarction (STEMI). • Sudden onset of chest pain, dyspnoea, arrhythmia, or collapse. • Exercise intolerance or reduced physical capacity affecting safety-critical duties. • Recurrent angina due to restenosis after PCI or graft failure after CABG. • Stent thrombosis, which may present as sudden, severe myocardial infarction with high mortality. • Complications related to dual antiplatelet therapy (DAPT), including bleeding events. Any of these incidents may impair the seafarer's ability to perform essential duties, delay emergency response, or compromise vessel safety.
Likelihood	Development of IHD in younger individuals: IHD may be clinically silent in individuals under 40 years of age. Autopsy data from 760 individuals aged 15–34 years demonstrated: • Advanced atheroma in 2% of males aged 15–19 and none of the females in this age group. • Advanced lesions in 20% of males and 8% of females aged 30–34. • Significant stenosis (≥40% of the left anterior descending artery) in 19% of males and 8% of females aged 30–34 [736]. Risk factors in this cohort included: 44% smokers, 14.3% BMI >30, 28% hypercholesterolaemia, 18.7% low HDL, 15.5% hypertension, and 4.3% impaired glucose tolerance. Clinical presentation in younger patients

[736] McGill HC Jr, McMahan CA, Zieske AW, et al. Association of Coronary Heart Disease Risk Factors with microscopic qualities of coronary atherosclerosis in youth. Circulation 2000; 102:374.

	Younger individuals often lack prodromal angina. In many cases, the first manifestation of IHD is an acute coronary syndrome that progresses rapidly to myocardial infarction if untreated [737] [738] [739] [740]. Silent myocardial ischaemia accounts for more than 75% of ischaemic episodes [741]. Exercise ECG has a sensitivity of approximately 60% and a specificity that may theoretically reach 90%, though in practice it is often below 80% [742]. **Likelihood of restenosis after PCI** Restenosis rates vary by stent type and patient risk profile: • **First-generation stents:** 22–32% angiographic restenosis at 6 months; higher rates with PTCA alone [743] [744]. • **Second-generation bare-metal stents**: Clinical restenosis requiring revascularisation in 12–14% at one year [745]. • **Drug-eluting stents (DES):** In-stent restenosis reported between 3% and 20%, depending on stent type, lesion complexity, and follow-up duration [746]. • **SIROLIMUS:** j-Cypher registry study: 7.3% target lesion revascularisation (TLR) at 1 year; 15.9% at 5 years [747]. • **ZOTAROLIMUS**: Endeavor IV study: 6.1–6.5% TLR at 3 years [748]. • **PACLITAXEL:** SIRTAX LATE study: 13.1–15.1% TLR at 5 years [749].

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	• **EVEROLIMUS:** Superior to paclitaxel stents [750] [751] [752] [753] [754] and comparable to sirolimus stents [755] [756] [757]. This is the type of DES most commonly used in Norway per 2025. The 12-months rates of target lesion failure were 2.9% (platinum chromium EES) and 3.4% (Cobalt chromium EES). At five years, target lesion failure was similar for both (9.1 percent versus 9.3 percent) as was stent thrombosis (0.8 percent versus 0.7 percent) [758] [759]. Restenosis risk ranges from 16% (no risk factors) to 59% (≥3 risk factors) [760]. **Likelihood of graft failure after CABG** **Saphenous vein grafts (SVG):** In the PREVENT IV trial[761] 1828 patients from 100 centres were followed up at 12 and 18 months by angiography. Vein graft failure was seen in 43% of patients and about 25% of the grafts had failed. Late occlusion sometime after the first 12 to 18 months occurs when the areas of intimal hyperplasia develop lipid deposition and finally an atherosclerotic-like plaque[762]. From the end of year one to year six, SVGs obstruct at the rate of approximately 2% per year; the subsequent closure rate rises to 4-5% per year. **Internal thoracic artery (ITA) grafts:** Long-term graft patency is much higher with ITA than venous grafts[763] [764] 765 766 767. ITA graft patency is over 95% at five years and slightly lower at 10 years, particularly if the graft is placed to the

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LAD[768] [769] [770]. Right ITA graft patency is similar at five years, but falls below 90% at 10 years, particularly if it is placed to the right coronary artery.

PCI in individuals under 40 years

The long-term outcome outcome of young patients undergoing percutaneous coronary intervention (PCI) is good[771] [772] [773]. In a study that assessed the outcome of PCI in 140 consecutive patients ≤40 years of age, the acute success rate was 93% with a 28% rate of angiographic restenosis[774]. Ten-year overall survival following PCI was 96% and ten-year event-free survival (without MI, elective CABG, or repeat PCI) was 58%.

Given these figures, the likelihood of a clinically relevant cardiac event during a two-year certificate period after PTCA, PCI, or CABG is moderate to high.

Likelihood of stent thrombosis

Stents are thrombogenic. Older studies demonstrated a thrombosis frequency of 18% (acute or sub-acute).
Stent thrombosis is defined as acute (within 24 hours), subacute (within 30 days) or late (up to 1 year) or very late (more than 1 year).
Stent thrombosis is most frequently seen shortly after the surgical intervention. The incidence within 30 days is 0.5-1.5% for both bare-metal stents and drug-eluting stents (DES)[775] [776] [777]. Late thrombosis (>30 days) is seen more often with DES, where stent thrombosis can occur after several years[778]. In non-selected patients with DES some reports demonstrates stent thrombosis at a yearly rate of 0.6% during three-year follow-up[779]. Late stent thrombosis usually presents a clinical picture similar to acute myocardial infarction, often with ST-elevations, and mortality is high (16-45%) in several studies[780] [781] [782] [783].

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	Likelihood related to antithrombotic therapy All patients who undergo percutaneous coronary intervention (PCI), including those treated with balloon angioplasty without stenting, receive dual antiplatelet therapy (DAPT), which is the combination of aspirin and a $P2Y_{12}$ receptor blocker. The rationale for the use of DAPT, as opposed to antiplatelet monotherapy, is derived from the known tendency of circulating blood to clot in the presence of many metals. This period of risk decreases after the metal portion of the stent is endothelialized[784] [785] [786] [787]. In early studies of patients who received bare metal stents (BMS), the rate of stent thrombosis was significantly lower with aspirin plus ticlopidine than with aspirin alone (or aspirin plus warfarin)[788] [789] [790] [791] [792]. Anticoagulation with warfarin alone does not provide sufficient protection against stent thrombosis compared to acetylsalicylic acid and tienpyridines and is not an alternative to antiplatelet treatment[793]. It is now recommended to use DAPT (acetylsalicylic acid + clopidogrel) for 12 months after PCI and continue acetylsalicylic acid throughout life[794]. In about 10% of the cases of PCI, the individual also needs anticoagulation (warfarin) for various reasons (earlier thrombosis, embolism, valve prosthesis etc.)[795]. In these cases, a delicate balance between the likelihood of thrombosis and the likelihood of bleeding must be taken into account.
Consequences	**Individual:** An acute coronary event at sea is typically severe and may progress rapidly. Urgent medical assessment and treatment are required, often within hours, to prevent significant morbidity or mortality. Delays inherent to the maritime environment increase the risk of adverse outcomes.

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	Crew: Crew members may need to provide immediate first aid, monitor the affected individual, and assume the seafarer's duties. They may also be required to support medical evacuation (MEDEVAC) procedures, which can be physically and psychologically demanding. **Ship:** A cardiac emergency may necessitate MEDEVAC or diversion to the nearest port, with associated operational delays and safety implications. Crew workload may increase substantially, and temporary or permanent crew replacement may be required. These factors may compromise safe vessel operation.
Unmitigated risk	Without mitigating measures, the likelihood of a significant cardiac event—such as acute coronary syndrome, restenosis, graft failure, or stent thrombosis—within the validity period of a two-year medical certificate is moderate to high for many individuals with a history of IHD or coronary intervention. Given the severity of consequences and the limited capacity for emergency cardiac care at sea, the unmitigated risk is generally unacceptable for: **Individual**: due to the potential for sudden, life-threatening deterioration. **Crew**: due to the burden of emergency care and the need to assume safety-critical duties. **Ship**: due to the risk of diversion, MEDEVAC, and operational disruption.
Mitigation	Mitigating measures may reduce both the likelihood and consequences of a cardiac event. These may include: • Appropriate medical treatment in accordance with current cardiology guidelines, including optimal medical therapy for secondary prevention. • Regular specialists follow-up, including assessment of symptom stability, functional capacity, and risk of restenosis or graft failure. • Restrictions or limitations based on the individual's likelihood of relapse, including: • reduced certificate validity; • restrictions on safety-critical duties; • limitations on trading area; • conditional certification requiring adherence to treatment. • Completion of recommended investigations, such as stress testing or imaging, to confirm stability. • Strict adherence to antiplatelet therapy, where indicated, and specialist assessment of bleeding versus thrombosis risk in those requiring combined antiplatelet and anticoagulant therapy.
Mitigated risk	When appropriate mitigation is in place and specialist assessment confirms a low likelihood of relapse within the certificate period, the mitigated risk may be considered: **Individual:** usually acceptable only if adequately mitigated. **Crew:** usually acceptable if mitigated. **Ship:** usually acceptable if mitigated. If the mitigated risk remains unacceptable, the determining factor is whether the condition is expected to improve within two years.

	• If improvement is expected: a temporary declaration of unfitness is indicated. • If not: a permanent declaration of unfitness is appropriate.
Recommendation	Given the rapid evolution of diagnostic and therapeutic approaches to ischaemic myocardial disease, a specialist cardiology assessment is generally required to determine the likelihood of relapse or recurrent events within the validity period of the medical certificate. This assessment should guide the application of restrictions, limitations, or conditional certification as appropriate.

22.9.4 CARDIAC ARRYTHMIAS, PACEMAKER AND ICD

I 44-49	Cardiac arrhythmias and conduction defects (including those with pacemakers and implanted cardioverter defibrillators (ICD)). Likelihood of impairment from recurrence, exercise limitation. Pacemaker/ICD activity may be affected by strong electric fields.	T – Until investigated, treated and adequacy of treatment confirmed P – If disabling symptoms present or excess likelihood of impairment from recurrence, including ICD implant	L – If surveillance needed at shorter intervals and no impairing symptoms present and very low excess likelihood of impairment from recurrence, based on specialist report R – Restrictions on solo duties or for distant waters if low likelihood of acute impairment from recurrence or foreseeable requirement for access to specialist care Surveillance and treatment regime to be specified. If pacemaker fitted, duration of medical certificate to coincide with pacemaker surveillance.	Surveillance not needed or needed at intervals of more than two years; no impairing symptoms present; and very low likelihood of impairment from recurrence, based on specialist report

22.9.4.1 I48 - ATRIAL FIBRILLATION

Reviewed 2026-01-07

Significance of condition	Atrial fibrillation (AF) is uncommon in infants and children, and healthy young adults have a very low likelihood of developing the condition [796]. In the ATRIA study, involving almost 1.9 million adults in the United States, the overall prevalence of AF was approximately 1%, ranging from 0.1% in individuals under 55 years of age to 9% in those over 80 years [797]. In developed countries, hypertensive heart disease and coronary artery disease are the most frequent underlying causes of AF [798]. Rheumatic heart disease, although now rare in developed countries, remains strongly associated with AF where it occurs [799].

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<table>
<tr><td></td><td>AF is of significance for seafarers because it may cause reduced physical capacity, impaired exercise tolerance, palpitations, dizziness, or heart failure. The condition also substantially increases the risk of arterial thromboembolism, including ischaemic stroke. Both the arrhythmia itself and its treatment (particularly anticoagulation) may affect the individual's ability to perform safety-critical duties on board.</td></tr>
<tr><td>Possible medical incident(s)</td><td>• Arterial thromboembolism, including ischaemic stroke.
• Peripheral embolisation, which accounts for <10% of embolic events; many episodes are subclinical [800].
• Congestive heart failure, due to persistent or recurrent AF reducing cardiac output.
• Acute symptomatic arrhythmia, causing dizziness, reduced capacity, or collapse.
• Bleeding complications related to anticoagulation therapy (major bleeding, intracranial haemorrhage).

These incidents may impair the seafarer's ability to perform duties safely and may require urgent medical attention.</td></tr>
<tr><td>Likelihood</td><td>he incidence of thromboembolism in AF varies depending on population characteristics, event definitions, and methods of ascertainment [Reference needed]. In large cohorts of non-anticoagulated patients, annual thromboembolic rates range from 2.1% to 5% per year corresponding too low to moderate likelihood in the regulatory framework [801] [802] [803] [804].

Two validated clinical prediction tools—CHA_2DS_2-VASc and $CHADS_2$—are widely used to estimate the likelihood of thromboembolic events and guide decisions regarding anticoagulation.

<table>
<tr><th></th><th>Congestive HF</th><th>Hypertension</th><th>Age ≥75 years</th><th>Diabetes mellitus</th><th>Stroke/TIA/TE</th><th>Vascular disease*</th><th>Age 65-74 years</th><th>Female sex</th><th>MAX SCORE</th></tr>
<tr><td>$CHADS_2$</td><td>1</td><td>1</td><td>1</td><td>1</td><td>2</td><td></td><td></td><td></td><td>6</td></tr>
<tr><td>CHA_2DS_2-VASc</td><td>1</td><td>1</td><td>2</td><td>1</td><td>2</td><td>1</td><td>1</td><td>1</td><td>9</td></tr>
<tr><td colspan="10">* (prior MI, PAD or aortic plaque)</td></tr>
</table>

Comparative analyses, such as that by Friberg et al. [805], demonstrate differing risk stratification performance between the two models.

<table>
<tr><td>$CHADS_2$ score</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td>Unadjusted ischemic stroke rate (% per year)</td><td>0.6</td><td>3.0</td><td>4.2</td><td>7.1</td><td>11.1</td><td>12.5</td><td>13.0</td></tr>
</table>
</td></tr>
</table>

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<table>
<tr><td></td><td>
<table>
<tr><td>CHA_2DS_2-VASc</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr>
<tr><td>Unadjusted ischemic stroke rate (% per year)</td><td>0.2</td><td>0.6</td><td>2.2</td><td>3.2</td><td>4.8</td><td>7.2</td><td>9.7</td><td>10.8</td><td>12.2</td></tr>
</table>

Effect of anticoagulation:
Anticoagulation reduces the risk of ischaemic stroke and other embolic events by approximately two-thirds, regardless of baseline risk [806] [807] [808].

Bleeding risk:
• Major bleeding with warfarin: 0.5–1.6% per year, rising to 4.2% per year in individuals >75 years[809] .
• Intracranial bleeding with warfarin: 0–0.5% per year (<75 years) and up to 1.8% per year (>75 years) [810] .
• In the same study, the figure for acetylsalicylic acid varies (for major bleeding) from 0.2 to 1.9 per year, and placebo from 0-1.8% per year.
• DOACs: lower overall bleeding risk than warfarin, with relative risks of approximately 0.8 for major bleeding and 0.5 for intracranial bleeding [811] [812] [813]. DOACs may lead to a small increased risk of intracerebral haemorrhage when compared with patients who are not receiving an oral anticoagulant.
</td></tr>
<tr><td>Consequences</td><td>Individual:
Consequences range from minor symptoms (palpitations, reduced exercise tolerance) to severe outcomes such as stroke, heart failure, or major bleeding. Most cases require ongoing medical follow-up.

Crew:
Crew members may need to assume the seafarer’s duties, provide first aid, or assist in medical evacuation.

Ship:
Operational consequences may include diversion, MEDEVAC, increased workload on remaining crew, and potential disruption of safe operations.</td></tr>
<tr><td>Unmitigated risk</td><td>Individual:
Unacceptable.
Without anticoagulation or appropriate rhythm/rate control, the likelihood of thromboembolism (2.1–5% per year) and the risk of acute arrhythmia-related impairment are incompatible with safe service at sea.

Crew:
Unacceptable.</td></tr>
</table>

[806] Risk factors for stroke and efficacy of antithrombotic therapy in atrial fibrillation. Analysis of pooled data from five randomized controlled trials. Arch Intern Med 1994; 154:1449.
[807] Hart RG, Pearce LA, Aguilar MI. Meta-analysis: antithrombotic therapy to prevent stroke in patients who have nonvalvular atrial fibrillation. Ann Intern Med 2007; 146:857.
[808] McNamara RL, Tamariz LJ, Segal JB, Bass EB. Management of atrial fibrillation: review of the evidence for the role of pharmacologic therapy, electrical cardioversion, and echocardiography. Ann Intern Med 2003; 139:1018.
[809] Gullov, AL, Koefoed, BG, Peterson, P, Arch Intern Med 1999; 159:1322.
[810] Gullov, AL, Koefoed, BG, Peterson, P, Arch Intern Med 1999; 159:1322.
[811] DOAC: Apixaban, dabigatran, edoxaban, rivaroxaban
[812] Chai-Adisaksopha C, Crowther M, Isayama T, Lim W. The impact of bleeding complications in patients receiving target-specific oral anticoagulants: a systematic review and meta-analysis. Blood 2014; 124:2450.
[813] Ruff CT, Giugliano RP, Braunwald E, et al. Comparison of the efficacy and safety of new oral anticoagulants with warfarin in patients with atrial fibrillation: a meta-analysis of randomised trials. Lancet 2014; 383:955.

	A sudden incapacitating event (stroke, arrhythmia, heart failure) may require emergency response and redistribution of duties. **Ship:** Unacceptable. The risk of acute medical events may necessitate diversion or MEDEVAC, posing operational and navigational risks. Overall unmitigated risk: Unacceptable.
Mitigation	Mitigating measures may include: • Antithrombotic therapy (warfarin or DOACs), which significantly reduces the likelihood of thromboembolism. • Rate or rhythm control to reduce symptoms and prevent heart failure. • Evidence from AFFIRM and RACE indicates that rhythm control does not reduce thromboembolic risk compared with rate control; events occurred mainly when anticoagulation was stopped or sub-therapeutic [Reference needed]. • Regular specialists follow-up, including ECG monitoring, assessment of anticoagulation adequacy, and evaluation of comorbidities. • Ensuring continuity of medication during voyages, including contingency supplies. • Restrictions on duties, if appropriate (e.g., avoiding solo watchkeeping if risk remains above “very low”). • Limiting certificate duration to align with required surveillance intervals. • Limiting sailing area, if access to specialist care may be required.
Mitigated risk	**Individual:** Acceptable if the condition is stable, adequately anticoagulated, symptoms are controlled, and specialist assessment confirms a very low likelihood of acute impairment. **Crew:** Acceptable if the seafarer is stable and the likelihood of sudden incapacitation is very low. **Ship:** Acceptable if treatment is stable, follow-up is maintained, and the risk of acute events is very low. **Overall mitigated risk:** Acceptable, provided effective mitigation is in place and maintained.
Recommendation	A recent specialist cardiology report should be obtained, including: CHA_2DS_2-VASc score • Bleeding risk assessment • Confirmation of anticoagulation adequacy • Assessment of symptom control and exercise tolerance • Ensure documentation of INR stability (for warfarin) or appropriate DOAC dosing. • Consider Holter monitoring or exercise testing where indicated. • Certificate duration should not exceed the interval recommended for clinical surveillance. If uncertainty remains regarding risk level or suitability for duty, the case should be prepared for referral to the appellate body.

22.9.4.2 I49.5 - SINUS NODE DYSFUNCTION / SICK SINUS SYNDROME

Reviewed 2026-01-07

Significance	Sinus node dysfunction (SND), also known as sick sinus syndrome, is characterised by progressive impairment of the sinoatrial (SA) node and adjacent atrial myocardium. It is most commonly seen in individuals aged 70 years and older, where degeneration of the sinus node and replacement with fibrous tissue is the predominant mechanism [814]. SND may also arise secondary to medications or toxins, including beta-blockers, calcium-channel blockers, digoxin, and other antiarrhythmic agents [815] [816] [817]. Additional causes include infiltrative diseases (e.g. amyloidosis, sarcoidosis, scleroderma, haemochromatosis, tumours), inflammatory conditions (e.g. rheumatic fever, pericarditis, diphtheria, Chagas disease), SA nodal artery disease, trauma, hypothyroidism, hypothermia, hypoxia, and certain muscular dystrophies. Transient SND may occur during acute infections [818]. SND is rare in children and young people, but when present is most often seen in those with congenital and acquired heart disease, particularly after corrective cardiac surgery[819] [820] [821] [822]. SND is of significance for seafarers because it may cause bradyarrhythmias, tachyarrhythmias, syncope, presyncope, or heart failure. These events may lead to sudden incapacitation, impaired performance of safety-critical duties, or the need for urgent medical intervention.
Possible medical incident(s)	• Fatigue, light-headedness, palpitations, presyncope or syncope. • Bradyarrhythmias, tachyarrhythmias, or alternating tachy-brady syndrome. • Sinoatrial block or sinus arrest. • Thromboembolic events, particularly in those with associated atrial fibrillation. • Heart failure due to inadequate cardiac output. • Chronic atrial fibrillation or poorly tolerated atrial arrhythmias. These incidents may impair the seafarer's ability to perform duties safely and may require urgent medical treatment.
Likelihood	**Progression over time:**

[814] Andersen HR, Thuesen L, Bagger JP, Vesterlund T, Thomsen PE. Prospective randomised trial of atrial versus ventricular pacing in sick-sinus syndrome. Lancet. 1994;344(8936):1523.
[815] Strauss HC, Gilbert M, Svenson RH, Miller HC, Wallace AG. Electrophysiologic effects of propranolol on sinus node function in patients with sinus node dysfunction. Circulation. 1976;54(3):452.
[816] Breithardt G, Seipel L, Wiebringhaus E, Loogen F. Effects of verapamil on sinus node function in man. Eur J Cardiol. 1978;8(3):379.
[817] Margolis JR, Strauss HC, Miller HC, Gilbert M, Wallace AG. Digitalis and the sick sinus syndrome. Clinical and electrophysiologic documentation of severe toxic effect on sinus node function. Circulation. 1975;52(1):162.
[818] James TN. The sinus node. Am J Cardiol 1977; 40:965.
[819] Yabek SM, Jarmakani JM. Sinus node dysfunction in children, adolescents, and young adults. Pediatrics 1978; 61:593.
[820] Hayes CJ, Gersony WM. Arrhythmias after the Mustard operation for transposition of the great arteries: a long-term study. J Am Coll Cardiol 1986; 7:133.
[821] Beder SD, Gillette PC, Garson A Jr, et al. Symptomatic sick sinus syndrome in children and adolescents as the only manifestation of cardiac abnormality or associated with unoperated congenital heart disease. Am J Cardiol 1983; 51:1133.
[822] Greenwood RD, Rosenthal A, Sloss LJ, et al. Sick sinus syndrome after surgery for congenital heart disease. Circulation 1975; 52:208.

	SND is generally progressive. In one study of 52 patients, the average time to progression from initial dysfunction to complete SA arrest with an escape rhythm was 13 years (range 7–29 years) [823]. Although some individuals experience intermittent periods of normal sinus node function, the overall course is one of gradual deterioration. Patients with alternating tachycardia and bradycardia have an increased likelihood of developing atrial fibrillation and thromboembolic complications [824], **Natural course:** In a prospective cohort of 35 symptomatic patients aged ≥45 years with resting sinus rates ≤50 beats/minute and/or intermittent SA block, who were followed without immediate intervention for an average of 17 months, 57% experienced a cardiovascular event requiring treatment, including [825]: • Syncope (23%), • Overt heart failure (17%), • Chronic atrial fibrillation (11%), or • Poorly tolerated atrial arrhythmias (6%). These figures indicate a moderate to high likelihood of clinically significant events in untreated or inadequately treated SND.
Consequences	**Individual:** Risk of sudden incapacitation, syncope, heart failure, or arrhythmia requiring urgent medical intervention. Treatment often requires facilities not available on board, such as intravenous access, continuous cardiac monitoring, atropine, transcutaneous pacing, dopamine infusion, transvenous pacing, or permanent pacemaker implantation. **Crew:** Need to care for an ill or incapacitated colleague, increased workload, and potential involvement in MEDEVAC operations. **Ship:** Operational disruption, diversion, MEDEVAC, and the need to replace the affected crew member.
Unmitigated risk	**Individual:** Unacceptable. The likelihood of syncope, arrhythmia, or heart failure is moderate to high, and sudden incapacitation poses a direct threat to the individual's safety. **Crew:** Unacceptable. Acute events may require emergency response and redistribution of duties. **Ship:**

[823] Lien WP, Lee YS, Chang FZ, et al. The sick sinus syndrome: natural history of dysfunction of the sinoatrial node. Chest 1977; 72:628.
[824] Lien WP, Lee YS, Chang FZ, Lee SY, Chen CM, Tsai HC. The sick sinus syndrome: natural history of dysfunction of the sinoatrial node. Chest. 1977;72(5):628
[825] Menozzi C, Brignole M, Alboni P, Boni L, Paparella N, Gaggioli G, Lolli G. The natural course of untreated sick sinus syndrome and identification of the variables predictive of unfavorable outcome. Am J Cardiol. 1998;82(10):1205

	Unacceptable. The risk of sudden incapacitation or need for urgent medical intervention may necessitate diversion or MEDEVAC. Overall unmitigated risk: Unacceptable.
Mitigation	**Mitigating measures may include:** • Treatment of reversible causes, including medication review and correction of metabolic or endocrine abnormalities. • Permanent pacemaker implantation, which is the standard treatment for symptomatic SND once reversible causes have been excluded. • Antithrombotic therapy, where indicated, particularly in patients with atrial fibrillation or tachy-brady syndrome. Risk stratification using CHA_2DS_2-VASc, $CHADS_2$, and HAS-BLED tools is appropriate. • Regular specialists follow-up, including pacemaker checks and assessment of arrhythmia burden. • Time-limited certification, aligned with the interval required for pacemaker surveillance or specialist review. • Restrictions on sailing area, to ensure timely access to specialist care if needed. • Restrictions on duties, if residual risk remains above “very low”. If additional conditions beyond those listed in the Regulations are required, the case must be referred to the appellate body.
Risk assessment	**Individual:** Acceptable if the condition is treated (typically with a pacemaker), symptoms are controlled, and specialist assessment confirms a very low likelihood of acute impairment. **Crew:** Acceptable if the seafarer is stable and the likelihood of sudden incapacitation is very low. **Ship:** Acceptable if treatment is stable, follow-up is maintained, and the risk of acute events is very low. **Overall mitigated risk:** Acceptable, provided effective mitigation is in place and maintained
Recommendation	• Obtain a recent specialist cardiology report, including pacemaker interrogation results (if applicable). • Confirm absence of untreated reversible causes. • Document arrhythmia burden and any associated atrial fibrillation. • Ensure appropriate anticoagulation assessment where indicated. • Align certificate duration with required surveillance intervals. • Consider referral to the appellate body if uncertainty remains regarding risk level or if conditions outside the Health Regulations are proposed.

22.9.4.1 I44 - ATRIOVENTRICULAR BLOCK

Reviewed 2026-01-07

Significance	Atrioventricular (AV) block encompasses a spectrum of conduction disturbances with diverse aetiologies, and its true incidence and prevalence are difficult to determine. One study of 21,213 individuals found first-degree AV block to be more common in African-American populations and in persons over 50 years of age across all racial groups [826]. Another study of 24-hour Holter recordings in 625 asymptomatic individuals aged 15–83 years identified type I second-degree AV block in 2.2% of participants, occurring more frequently in those with a resting heart rate below 60 beats per minute [827]. Approximately 50% of AV block cases are idiopathic, progressive conduction disorders caused by fibrosclerosis (e.g. Lenègre's disease, Lev's disease). Other causes include ischaemic heart disease, cardiomyopathies, myocarditis, congenital heart disease, and familial conduction disorders [828]. A 2016 meta-analysis demonstrated that first-degree AV block is associated with an increased risk of all-cause mortality, heart failure, reduced left ventricular function, and atrial fibrillation. However, first-degree block was not associated with increased cardiovascular mortality, coronary heart disease, myocardial infarction, or stroke [829]. AV block is of significance in seafaring because progression to higher-grade block or symptomatic bradyarrhythmia may impair the individual's ability to perform safety-critical duties and may pose risks to the health and safety of the individual, other crew members, and the safe operation of the vessel.
Possible medical incident(s)	Symptoms may arise directly from the conduction disturbance or from an underlying cardiac condition. • First-degree AV block: Typically benign and almost always asymptomatic. Symptoms directly attributable to the conduction delay are rare. • Second- and third-degree AV block: Fatigue, dyspnoea, chest discomfort, presyncope, syncope, or sudden cardiac arrest. These events may occur unpredictably and may lead to acute incapacitation.
Likelihood	The likelihood of a medical incident depends primarily on: • the underlying cause of the AV block; • the degree of conduction impairment; • the presence or absence of symptoms; • whether a permanent pacemaker has been implanted. **First-degree and type I second-degree AV block:**

[826] Upshaw CB Jr. Comparison of the prevalence of first-degree atrioventricular block in African-American and in Caucasian patients: an electrocardiographic study III. J Natl Med Assoc. 2004;96:756-760.
[827] DePaula RS, Antelmi I, Vincenzi MA, et al. Cardiac arrhythmias and atrioventricular block in a cohort of asymptomatic individuals without heart disease. Cardiology. 2007;108:111-116.
[828] Zoob M, Smith KS. The aetiology of complete AV-block. Br Med J 1963; 2:1149.
[829] Kwok CS, Rashid M, Beynon R, Barker D, Patwala A, Morley-Davies A, Satchithananda D, Nolan J, Myint PK, Buchan I, Loke YK, Mamas MA. Prolonged PR interval, first-degree heart block and adverse cardiovascular outcomes: a systematic review and meta-analysis. Heart. 2016;102(9):672.

	• Generally low likelihood of progression or serious events. • Symptoms, when present, may be related to concomitant use of AV-nodal-blocking medication. • Likelihood level: Very low to low, depending on comorbidity and symptom burden. **Type II second-degree and third-degree AV block [830]:** • High likelihood of symptomatic bradycardia, syncope, or progression to complete heart block if untreated. • Likelihood level without pacing: High. • After pacemaker implantation: Very low, with excellent long-term prognosis and low complication rates
Consequences	**Individual:** Acute reduction in physical performance, sudden incapacitation, syncope, need for urgent medical intervention, MEDEVAC, and possible hospitalisation. **Crew:** Requirement to care for an incapacitated colleague, redistribution of duties, increased workload, and risks associated with MEDEVAC operations. **Ship:** Operational disruption, diversion, delay, increased workload on remaining crew, and potential need for replacement personnel.
Unmitigated risk	**Individual:** • First-degree or type I second-degree block: Generally acceptable unmitigated risk unless symptoms are present or underlying disease is significant. • Type II second-degree or third-degree block: Unacceptable unmitigated risk due to the potential for sudden incapacitation, syncope, or cardiac arrest. **Crew:** Unacceptable for untreated higher-grade block; acceptable for asymptomatic low-grade block. **Ship**: Unacceptable for untreated higher-grade block; acceptable for asymptomatic low-grade block. **Overall:** Unmitigated risk is unacceptable for type II second-degree and third-degree AV block, and acceptable for first-degree and type I second-degree block provided no symptoms or significant underlying pathology are present.
Mitigation	Mitigating measures may include: • Permanent pacemaker implantation where indicated (type II second-degree or third-degree block, or symptomatic lesser block). • Optimisation of treatment for underlying cardiac disease. • Discontinuation of AV-nodal-blocking medications where appropriate.

[830] Sauer W H et al. Second-degree atrioventricular block: Mobitz type II. UpToDate.com updated 2025-08-27, literature review current through Dec.2025.

	• Regular cardiology follow-up, including pacemaker checks at recommended intervals. • Restriction of duties or sailing area if clinically justified. • Limitation of certificate validity to ensure appropriate monitoring.
Mitigated risk	**Individual:** Acceptable once a pacemaker has been implanted (where indicated) and follow-up is maintained. For asymptomatic first-degree or type I second-degree block, acceptable with or without restrictions depending on underlying pathology**.** **Crew:** Acceptable following effective mitigation. **Ship:** Acceptable following effective mitigation**.** **Overall:** Mitigated risk is acceptable for individuals with appropriately treated higher-grade block and for those with asymptomatic low-grade block. If the condition cannot be adequately treated or stabilised within two years, a permanent declaration of unfitness may be required.
Recommendation	• Specialist cardiology assessment should be obtained for all cases of type II second-degree or third-degree AV block, or where symptoms are present. • Documentation of pacemaker dependency, device type, and follow-up schedule should be included. • Consideration should be given to the specific duties of the seafarer, particularly where safety-critical tasks are involved.

22.9.4.2 I47.2 - VENTRICULAR TACHYCARDIA

Reviewed 2026-01-07

Significance	**Non sustained Ventricular Tachycardia (NSVT)** NSVT is a relatively common arrhythmia, often asymptomatic and detected incidentally. It has long been recognised as a potential marker for the development of sustained ventricular arrhythmias and sudden cardiac death. However, while NSVT is associated with increased all-cause mortality, it does not specifically predict sudden cardiac death; the underlying structural heart disease is the primary determinant of risk [831]. The estimated prevalence of NSVT in the general population is up to 4%, although this is likely an underestimate. Prevalence increases with age, with no clear sex-specific differences [832]. NSVT is more common in individuals post-myocardial infarction (5–9%), particularly in those with left ventricular ejection fraction (LVEF) <35% (12% vs. 6% in those with LVEF >35%) [Reference

[831] Zimetbaum PJ, Wylie, JV et al. Nonsustained ventricular tachycardia: Clinical manifestations, evaluation and management. UpToDate.com, updated Mar 04, 2025, lietrature review current through Dec. 2025. Visited 2026-01-07.
[832] Kostis JB, McCrone K, Moreya AE, et al. Premature ventricular complexes in the absence of identifiable heart disease. Circulation. 1981;63:1351-1356.

needed]. It is also observed in approximately 25% of patients with hypertrophic obstructive cardiomyopathy and up to 80% of those with idiopathic dilated cardiomyopathy [833] [834].

Asymptomatic NSVT generally does not require specific antiarrhythmic therapy. Management focuses on optimal treatment of underlying cardiac disease. Symptomatic patients (palpitations, chest discomfort, dyspnoea, presyncope or syncope) may require beta-blockers or other antiarrhythmic agents depending on the clinical context. Implantable cardioverter-defibrillators (ICDs) are not typically indicated for NSVT alone but may be appropriate in individuals with cardiomyopathy at increased risk of sustained ventricular arrhythmias.

Sustained monomorphic ventricular tachycardia (SMVT)
SMVT may be idiopathic but most commonly occurs in individuals with structural heart disease, including [835]:

- Coronary artery disease (up to 70% of cases in the United States)
- Dilated cardiomyopathy
- Hypertrophic cardiomyopathy
- Infiltrative cardiomyopathies
- Chagas disease
- Complex congenital heart disease
- Cardiac sarcoidosis
- Arrhythmogenic right ventricular cardiomyopathy
- Left ventricular non-compaction

Clinical presentation ranges from sudden cardiac arrest to mild symptoms such as palpitations, dyspnoea, chest pain, syncope, or general malaise. Population studies estimate the incidence of fatal ventricular arrhythmias at approximately 54 per 100,000 persons per year, with higher rates in older individuals and those with structural heart disease or coronary risk factors [836].

Idiopathic SMVT generally carries a favourable prognosis with appropriate treatment. In contrast, SMVT associated with left ventricular dysfunction often reflects re-entrant circuits that may degenerate into ventricular fibrillation, with high associated mortality. ICD implantation is the most effective intervention for reducing mortality in high-risk patients [837] [838].

Sustained polymorphic ventricular tachycardia (SPVT)
SPVT may occur in the presence of structural heart disease but can also arise without a discrete anatomical substrate. Mechanisms include dynamic re-entry, spiral wave re-entry, and multiple automatic foci. SPVT frequently degenerates into ventricular fibrillation and is commonly associated with acute

[833] Maggioni AP, Zuanetti G, Franzosi MG, et al. Prevalence and prognostic significance of ventricular arrhythmias after acute myocardial infarction in the fibrinolytic era. Circulation. 1993;87:312-322.
[834] Bigger JT Jr, Fleiss JL, Kleiger R, et al. The relationships among ventricular arrhythmias, left ventricular dysfunction, and mortality in the 2 years after myocardial infarction. Circulation. 1984;69:250-258.
[835] Buxton A et al. Sustaind monomorphic ventricular tachycardia: Clinical manifestations, diagnosis and evaluation.UpToDate.com. Updated Sep. 29, 2025. Literature review current through Dec 2025. Visited 2025.01.07.
[836] Stecker E, Vickers C, Waltz J, et al. Population-based analysis of sudden cardiac death with and without left ventricular systolic dysfunction: two-year findings from the Oregon Sudden Unexpected Death Study. J Am Coll Cardiol. 2006;47:1161-1166.
[837] Yarlagadda RK, Iwai S, Stein KM, et al. Reversal of cardiomyopathy in patients with repetitive monomorphic ventricular ectopy originating from the right ventricular outflow tract. Circulation. 2005;112:1092-1097.
[838] Zipes DP, Camm AJ, Borggrefe M, et al. ACC/AHA/ESC 2006 guidelines for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death. Circulation. 2006;114:e385-e484.

	myocardial infarction or ischaemia, ventricular hypertrophy, and genetic channelopathies [839]. **Relevance to maritime service** Ventricular tachycardias—particularly sustained forms—pose a significant risk of sudden incapacitation, syncope, or cardiac arrest. These events may occur unpredictably and without prodrome, representing a substantial hazard to the individual, other crew members, and the safe operation of the vessel.
Possible medical incident(s)	NSVT • Palpitations • Dyspnoea • Chest discomfort • Presyncope or syncope • (Rarely sudden cardiac death related to underlying disease) SMVT / SPVT • Syncope or sudden collapse • Haemodynamic instability • Ventricular fibrillation • Sudden cardiac arrest • Acute heart failure symptoms • Requirement for emergency medical intervention or defibrillation
Likelihood	**The likelihood of a significant medical incident depends primarily on:** • the presence and severity of structural heart disease; • left ventricular function; • the type of ventricular tachycardia (NSVT vs. SMVT vs. SPVT); • the presence of symptoms; • whether an ICD has been implanted; • adequacy of medical management. **NSVT:** • In individuals without structural heart disease: Very low to low likelihood of serious events. • In those with cardiomyopathy or reduced LVEF: Moderate to high likelihood of progression or serious arrhythmia. **SMVT:** • Idiopathic SMVT: Low to moderate likelihood of serious events with appropriate treatment. • SMVT with structural heart disease: High likelihood of recurrence, syncope, or degeneration to ventricular fibrillation without ICD protection. **SPVT:** • Typically high likelihood of progression to ventricular fibrillation and sudden cardiac arrest.

[839] John RM, Stevenson WG. Chapter 250: Polymorphic Ventricular Tachycardia and Ventricular Fibrilliation. Harrison's «Principles of Internal Medicine», 20th Edition, 2018. McGraw-Hill Education.

	In ischaemic cardiomyopathy with NSVT, sudden-death mortality may approach 30% over two years [840]. In idiopathic VT, prognosis is excellent, with the main risk being injury from syncope rather than arrhythmic death [841]. Likelihood must be assessed on an individualised basis, informed by specialist cardiology evaluation.
Consequences	**Individual:** • Sudden incapacitation, syncope, collapse, cardiac arrest • Requirement for urgent medical treatment or defibrillation • MEDEVAC and hospitalisation • Risk of injury secondary to loss of consciousness **Crew:** • Need to care for an incapacitated colleague • Redistribution of duties and increased workload • Risks associated with emergency response or MEDEVAC operations **Ship:** • Operational disruption, diversion, or delay • Increased workload on remaining crew • Potential need for replacement personnel • Safety risks during critical navigational or engineering tasks
Unmitigated risk	**Individual:** • NSVT without structural heart disease: May be acceptable if asymptomatic and stable. • NSVT with structural heart disease: Unacceptable due to increased risk of progression or sudden incapacitation. • SMVT or SPVT (any cause): Unacceptable due to high risk of sudden incapacitation or cardiac arrest. **Crew:** Unacceptable for any untreated or unstable ventricular tachycardia. **Ship:** Unacceptable for any untreated or unstable ventricular tachycardia. **Overall:** Unmitigated risk is unacceptable for all forms of sustained VT and for NSVT associated with structural heart disease.
Mitigation	Possible mitigating measures include: • Full cardiology evaluation, including imaging, Holter monitoring, and electrophysiological assessment. • Optimisation of treatment for underlying cardiac disease. • Antiarrhythmic medication where indicated. • ICD implantation for individuals meeting guideline-based criteria. • Regular specialists follow-up and device checks.

[840] Ezad SM, Babu G, O'Kane P. Sudden Cardiac Death in Ischaemic Cardiomyopathy and the Primary Prevention ICD: Time for a More a Personalised Approach? Interv Cardiol. 2023 Apr 5;18:e11. doi: 10.15420/icr.2022.14. PMID: 37398871; PMCID: PMC10311393.
[841] Ward RC, van Zyl M, DeSimone CV. Idiopathic Ventricular Tachycardia. J Clin Med. 2023 Jan 25;12(3):930. doi: 10.3390/jcm12030930. PMID: 36769578; PMCID: PMC9918172.

	• Restriction of duties or sailing area where appropriate. • Limitation of certificate validity to ensure close monitoring. Any conditions not listed in the Health Regulations require referral to the appellate body.
Mitigated risk	**Individual:** • Acceptable for asymptomatic NSVT without structural heart disease, with appropriate evaluation and follow-up. • Acceptable for SMVT or NSVT associated with structural heart disease only if adequately treated (e.g., ICD in situ, stable condition, no recent events). • SPVT generally remains unacceptable unless the underlying cause is fully corrected and risk demonstrably reduced. **Crew:** Acceptable only after effective mitigation and specialist confirmation of stability. **Ship:** Acceptable only after effective mitigation and demonstration of low likelihood of sudden incapacitation. **Overall:** Mitigated risk may be acceptable in selected, well-treated cases with specialist confirmation.
Recommendation	• All individuals with a history of ventricular tachycardia—sustained or non-sustained—should undergo specialist cardiology assessment. • Documentation should include underlying diagnosis, left ventricular function, arrhythmia burden, treatment, and prognosis. • Particular attention should be paid to the risk of sudden incapacitation in relation to the seafarer's assigned duties. • Consideration should be given to the validity period of the certificate, ensuring alignment with follow-up intervals.

22.9.4.3 Z95.0 - USE OF PACEMAKER

Reviewed 2026-01-07

Significance	The risks associated with the underlying cardiac condition requiring pacing must always be assessed separately. A permanent pacemaker significantly reduces the risk of bradyarrhythmias and conduction-related syncope; however, the device itself introduces potential complications. This section addresses the risks associated with pacemaker use, not the underlying cardiac pathology. Pacemaker-related complications may impair the seafarer's ability to perform safety-critical duties and may necessitate urgent medical intervention, thereby posing risks to the individual, other crew members, and the safe operation of the vessel.

Possible medical incident(s)	Potential complications associated with pacemaker implantation and long-term use include: • Haematoma at the generator pocket • Lead dislodgement • Infection (pocket, lead, valvular, or endocardial) • Lead perforation • Pacemaker-related dysrhythmias (e.g. failure to sense, inappropriate pacing, pacemaker-induced ventricular tachycardia) • Electromagnetic interference (EMI) affecting device function
Likelihood	**Generator pocket hematoma** Occurs in approximately 3% of implantations [842]. Risk is higher in individuals receiving antithrombotic therapy or with renal or heart failure. **Lead dislodgement** Most commonly associated with lead or generator revision procedures [843]. Typically occurs within the first three months after implantation [844]. A study of 929 devices (3,909 leads) reported a re-intervention rate of 4.4% [845]. **Infections** Infections may involve the generator pocket, lead system, heart valves, or endocardium [846]. Incidence may be as high as 5% following initial implantation or generator replacement, with approximately three-quarters occurring within the first year [847]. Risk factors include diabetes, end-stage renal disease, heart failure, steroid therapy, lack of antibiotic prophylaxis, COPD, prior device infection, pocket haematoma, temporary pacing, lead revision, and device replacement [848]. **Lead perforation** Relatively rare (up to 0.8% of pacemaker complications) but potentially life-threatening. May cause pericardial effusion, pneumothorax, haemothorax, or death [849]. **Pacemaker-related dysrhythmias** May occur when the device fails to sense intrinsic QRS complexes, including premature ventricular contractions, resulting in inappropriate pacing that may trigger ventricular tachycardia [850] **Electromagnetic interference (EMI)**

[842] Mulpuru SK, Madhavan M, McLeod CJ, Cha YM, Friedman PA. Cardiac pacemakers: function, troubleshooting, and management: part 1 of a 2-part series. J Am Coll Cardiol. 2017;69(2):189–210.
[843] Poole JE, Gleva MJ, Mela T, et al. Complication rates associated with pacemaker or implantable cardioverter-defibrillator generator replacements and upgrade procedures: results from the REPLACE registry. Circulation. 2010;122(16):1553–1561.
[844] Ganz LI. Cardiac implantable electronic devices: peri-procedural complications. UpToDate. 2018. www.uptodate.com.
[845] A. Ghani, P. P. H. M. Delnoy, A. R. Ramdat Misier, J. J. J. Smit, A. Adiyaman, J. P. Ottervanger, and A. Elvan. Incidence of lead dislodgement, malfunction and perforation during the first year following device implantation. Neth Heart J. 2014 Jun; 22(6): 286–291.
[846] Mulpuru SK, Madhavan M, McLeod CJ, Cha YM, Friedman PA. Cardiac pacemakers: function, troubleshooting, and management: part 1 of a 2-part series. J Am Coll Cardiol. 2017;69(2):189–210.
[847] Mulpuru SK, Madhavan M, McLeod CJ, Cha YM, Friedman PA. Cardiac pacemakers: function, troubleshooting, and management: part 1 of a 2-part series. J Am Coll Cardiol. 2017;69(2):189–210.
[848] Karchmer AW. Infections involving cardiac implantable electronic devices: epidemiology, microbiology, clinical manifestations, and diagnosis. UpToDate. 2018. www.uptodate.com.
[849] Chao JA, Firstenberg MS. Delayed pacemaker lead perforations: why unusual presentations should prompt an early multidisciplinary team approach. Int J Crit Illn Inj Sci. 2017;7(1):65–68.
[850] Alasti M, Machado C, Rangasamy K, Bittinger L, Healy S, Kotschet E, Adam D, Alison J. Pacemaker-mediated arrhythmias. J Arrhythm. 2018 Aug 3;34(5):485-492. doi: 10.1002/joa3.12098. PMID: 30327693; PMCID: PMC6174501.

	Some occupational environments may expose individuals to magnetic or electromagnetic fields capable of interfering with pacemaker function. Unipolar leads are particularly susceptible [851]. **Overall likelihood:** • Most complications occur early (first 3–12 months). • Long-term complication rates are low with modern devices. • Likelihood varies with comorbidities, device type, and occupational exposure.
Consequences	**Individual:** • Pain, discomfort, or reduced physical performance • Syncope, presyncope, or arrhythmia due to device malfunction • Need for urgent medical evaluation, MEDEVAC, or hospitalisation • Potential life-threatening complications (e.g. perforation, severe infection) **Crew:** • Need to care for an incapacitated colleague • Redistribution of duties and increased workload • Risks associated with emergency medical response or MEDEVAC **Ship:** • Operational disruption, diversion, or delay • Increased workload on remaining crew • Potential need for replacement personnel • Safety risks during critical operations if the affected individual holds a safety-critical role
Unmitigated risk	**Individual:** Unacceptable if: • the device is newly implanted (<3 months), • complications are unresolved, • there is risk of EMI exposure without assessment, • the underlying condition remains unstable. Acceptable if: • the device is functioning normally, • the individual is asymptomatic, • no early post-implantation complications are present. **Crew:** • Unacceptable if device malfunction or early complications could lead to sudden incapacitation. **Ship:** • Unacceptable if the seafarer is exposed to significant EMI or if early post-implantation risks remain.

[851] Maria Tiikkaja, Aapo L. Aro, Tommi Alanko, Harri Lindholm, Heli Sistonen, Juha E.K. Hartikainen, Lauri Toivonen, Jukka Juutilainen, Maila Hietanen. Electromagnetic interference with cardiac pacemakers and implantable cardioverter-defibrillators from low-frequency electromagnetic fields in vivo. EP Europace, Volume 15, Issue 3, March 2013, Pages 388–394,

	Overall: • Unmitigated risk is unacceptable during the early post-implantation period and in the presence of unresolved complications.
Mitigation	Mitigating measures may include: • Completion of the early post-implantation stabilisation period (typically ≥3 months). • Confirmation of device function through specialist follow-up and interrogation. • Avoidance of occupational environments with significant EMI unless assessed as safe. • Restriction of duties or sailing area where appropriate. • Limitation of certificate validity to align with device follow-up intervals. • Ensuring access to regular cardiology review.
Mitigated risk	**Individual:** Acceptable once the device is stable, functioning normally, and the individual is asymptomatic, with no unresolved complications. **Crew:** Acceptable once the risk of sudden incapacitation is demonstrably low. **Ship:** Acceptable once EMI exposure has been assessed and deemed safe, and the device is stable. **Overall:** Mitigated risk is acceptable for individuals with a stable, well-functioning pacemaker or ICD, following specialist evaluation and appropriate restrictions where necessary.
Recommendation	• Seafarers with pacemakers should undergo specialist cardiology assessment before certification. • Device interrogation reports should be reviewed to confirm stability and absence of complications. • Occupational EMI exposure must be evaluated, particularly in engineering, electrical, and radio-frequency environments. • Most individuals can return to work after implantation of a bipolar pacemaker or ICD, provided that risk assessment confirms safe exposure levels and device stability.

22.9.4.4 Z95.0 – USE OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR (ICD)

Reviewed 2026-01-07

Significance	The risks associated with the underlying cardiac condition requiring ICD implantation must always be assessed separately. An ICD significantly reduces the risk of sudden cardiac death by detecting and terminating life-threatening ventricular arrhythmias. However, the device itself introduces potential complications that may affect fitness for service at sea. **This section addresses the risks associated with ICD use, not the underlying cardiac pathology.** Modern ICD systems consist of: 1. Pacing and sensing electrodes

	2. Defibrillation electrodes 3. A pulse generator Since the early 1990s, transvenous ICD systems have largely replaced epicardial systems. Contemporary devices typically use a single ventricular lead incorporating both pacing/sensing and defibrillation coils. Integrated bipolar sensing reduces susceptibility to extraneous electrical interference, thereby lowering the risk of inappropriate device function. Given the potential for device malfunction, inappropriate shocks, and electromagnetic interference (EMI), ICD use is of particular relevance to maritime operations where sudden incapacitation poses significant risks to the individual, crew, and vessel.
Possible medical incident(s)	Potential ICD-related complications include: • Rehospitalisation • Reoperation (e.g., for lead revision or generator replacement) • Pulse generator malfunction • Lead malfunction or fracture • Infection of the generator pocket, leads, valves, or endocardium (potentially life-threatening) • Tricuspid regurgitation due to lead-related valve interference • Increased defibrillation threshold • Effects of ICD shocks (appropriate or inappropriate), including transient incapacitation • Phantom shocks (perception of shock without delivery) • Electromagnetic interference leading to inappropriate sensing or therapy
Likelihood	**Overall complications rate** A large National Cardiovascular Data Registry study (114,484 patients; median follow-up 2.7 years; mean age 74.8 years) reported ICD-related complications requiring hospitalisation or reoperation at 6.1 per 100 patient-years [852]. A Canadian cohort of 3,410 ICD recipients (median follow-up 34 months) found an annual reoperation rate of 12% [853]. There are a variety of potential complications associated with the use of cardiac implantable devices. **Major complications** in first time ICD patients requiring reoperation or hospitalization were analysed in a cohort of over 114000 patients aged 65 years and a medial follow up of 2,7 years. The rate of ICD complications was found to be 6,1 per 100 patient years ie a rate of 0,061 per year[854].

[852] Ranas Ganz LI. Cardiac implantable electronic devices: peri-procedural complications. UpToDate. 2018. www.uptodate.com.inghe I, Parzynski CS, Freeman JV, et al. Long-Term Risk for Device-Related Complications and Reoperations After Implantable Cardioverter-Defibrillator Implantation: An Observational Cohort Study. Ann Intern Med 2016.
[853] Hawkins NM, Grubisic M, Andrade JG, et al. Long-term complications, reoperations and survival following cardioverter-defibrillator implant. Heart 2018; 104:237.
[854] Ranasinghe I, Parzynski CS, Freeman JV, Dreyer RP, Ross JS, Akar JG, Krumholz HM, Curtis JP. Long-Term Risk for Device-Related Complications and Reoperations After Implantable Cardioverter-Defibrillator Implantation: An Observational Cohort Study. Ann Intern Med. 2016 May

	Pulse generator malfunction A 2006 meta-analysis of >20,000 ICDs implanted between 1974 and 2004 reported pulse generator malfunction rates of 26.5 per 1,000 person-years [855]. **Lead malfunctions** Lead failure rates vary widely: • 1–9% at 2 years • 2–15% at 5 years • 5–40% at 8–10 years Variability reflects differing definitions and lead models [856] [857] [858]. **Infection** Estimated incidence: 0.8–5.7%, with most infections occurring within the first 12 months Risk factors include diabetes, renal failure, heart failure, steroid therapy, COPD, prior device infection, pocket haematoma, temporary pacing, and lead revision [859]. **Tricuspid regurgitation (TR)** Occurs in 10–20% of individuals with transvenous ICD leads, with approximately 50% of those with severe TR developing heart failure symptoms [860] [861] [862]. Lead removal may not reverse TR once annular dilatation is established [863]. **Effects from shocks.** • In the MADIT-RIT study (1,500 patients; 1.4-year follow-up), 4.3% experienced syncope despite ICD protection [864]. • ICD shocks—appropriate or inappropriate—may cause transient incapacitation, anxiety, or reduced functional capacity.

[855] Maisel WH. Pacemaker and ICD generator reliability: meta-analysis of device registries. JAMA 2006; 295:1929.
[856] Eckstein J, Koller MT, Zabel M, et al. Necessity for surgical revision of defibrillator leads implanted long-term: causes and management. Circulation 2008; 117:2727.
[857] Maisel WH, Kramer DB. Implantable cardioverter-defibrillator lead performance. Circulation 2008; 117:2721.
[858] van Rees JB, van Welsenes GH, Borleffs CJ, et al. Update on small-diameter implantable cardioverter-defibrillator leads performance. Pacing Clin Electrophysiol 2012; 35:652.
[859] Shehzad M, Younis H, Azhar R, Shehzad D, Usman NZ. Risk Factors, Pathogenesis, Prevention and Clinical Features of Cardiovascular Implantable Electronic Device (CIED) Infections. J Community Hosp Intern Med Perspect. 2025 Mar 7;15(2):48-55. doi: 10.55729/2000-9666.1457. PMID: 40309287; PMCID: PMC12039327.
[860] Lin G, Nishimura RA, Connolly HM, et al. Severe symptomatic tricuspid valve regurgitation due to permanent pacemaker or implantable cardioverter-defibrillator leads. J Am Coll Cardiol 2005; 45:1672.
[861] Chang JD, Manning WJ, Ebrille E, Zimetbaum PJ. Tricuspid Valve Dysfunction Following Pacemaker or Cardioverter-Defibrillator Implantation. J Am Coll Cardiol 2017; 69:2331.
[862] Cho MS, Kim J, Lee JB, et al. Incidence and predictors of moderate to severe tricuspid regurgitation after dual-chamber pacemaker implantation. Pacing Clin Electrophysiol 2019; 42:85.
[863] Nazmul MN, Cha YM, Lin G, et al. Percutaneous pacemaker or implantable cardioverter-defibrillator lead removal in an attempt to improve symptomatic tricuspid regurgitation. Europace 2013; 15:409.
[864] Ruwald MH, Okumura K, Kimura T, et al. Syncope in high-risk cardiomyopathy patients with implantable defibrillators: frequency, risk factors, mechanisms, and association with mortality: results from the multicenter automatic defibrillator implantation trial-reduce inappropriate therapy (MADIT-RIT) study. Circulation 2014; 129:545.

	• Inappropriate shocks occur in up to 25–40% of patients, often due to supraventricular tachycardia, electrical noise, or lead fracture[865] [866] [867] [868] [869] [870]. • Multiple inappropriate shocks may lead to PTSD-like symptoms [871]. • Appropriate shocks may have an adverse effect on quality of life, including emotional problems and restrictions in activities where a medical certificate is needed, e.g. driving. • Phantom shocks are reported in approximately 9% of patients[872]. **Electromagnetic interference (EMI)** Although modern ICDs are well shielded, EMI remains a concern in certain occupational settings. **Potential sources include:** • Induction cooktops (rare circumstances) • Portable media players held very close to the device • CB radios and large speakers • Anti-shoplifting gates and metal detectors (transient exposure generally safe; “don’t linger, don’t lean”) • Industrial equipment such as welding machines, electric motors, and degaussing coils **Workplace EMI assessment is essential, particularly for pacemaker-dependent individuals or those with ICDs.** NEED FOR FOLLOW-UP Follow up can take place in person or remotely with the approach taken tailored to the individual patient and according to local protocol. It is usually recommended that the patient is seen in person initially and at least every 12 months[873] and a specialist report should include the planned follow up required for each patient, including any events which, should they occur would necessitate more urgent specialist review. Interactions with electromagnetic fields

[865] Klein RC, Raitt MH, Wilkoff BL, et al. Analysis of implantable cardioverter defibrillator therapy in the Antiarrhythmics Versus Implantable Defibrillators (AVID) Trial. J Cardiovasc Electrophysiol 2003; 14:940.
[866] Dichtl W, Wolber T, Paoli U, et al. Appropriate therapy but not inappropriate shocks predict survival in implantable cardioverter defibrillator patients. Clin Cardiol 2011; 34:433.
[867] Daubert JP, Zareba W, Cannom DS, et al. Inappropriate implantable cardioverter-defibrillator shocks in MADIT II: frequency, mechanisms, predictors, and survival impact. J Am Coll Cardiol 2008; 51:1357.
[868] Saxon LA, Hayes DL, Gilliam FR, et al. Long-term outcome after ICD and CRT implantation and influence of remote device follow-up: the ALTITUDE survival study. Circulation 2010; 122:2359.
[869] Poole JE, Johnson GW, Hellkamp AS, et al. Prognostic importance of defibrillator shocks in patients with heart failure. N Engl J Med 2008; 359:1009.
[870] Powell BD, Saxon LA, Boehmer JP, et al. Survival after shock therapy in implantable cardioverter-defibrillator and cardiac resynchronization therapy-defibrillator recipients according to rhythm shocked. The ALTITUDE survival by rhythm study. J Am Coll Cardiol 2013; 62:1674.
[871] Dichtl W, Wolber T, Paoli U, Brüllmann S, Stühlinger M, Berger T, Spuller K, Strasak A, Pachinger O, Haegeli LM, Duru F, Hintringer F. Appropriate therapy but not inappropriate shocks predict survival in implantable cardioverter defibrillator patients. Clin Cardiol. 2011;34(7):433
[872] Berg SK, Moons P, Zwisler AD, et al. Phantom shocks in patients with implantable cardioverter defibrillator: results from a randomized rehabilitation trial (COPE-ICD). Europace 2013; 15:1463.
[873] Slotwiner D, Varma N, Akar JG, Annas G, Beardsall M, Fogel RI, Galizio NO, Glotzer TV, Leahy RA, Love CJ, McLean RC, Mittal S. HRS Expert Consensus Statement on remote interrogation and monitoring for cardiovascular implantable electronic devices. Heart Rhythm. 2015;12(7):e69.

	There has always been concern regarding the potential for elctromagnetic interference with cardiac implantable devices but the risk is quite low[874] [875]. Electromagnetic interference can occur in a hospital setting or non hospital environment. There have been occasional reports of cardiac implantable devices being impacted by sources such as slot machines and laptop computers and are disclaimers relating to keyless entry systems and hybrid engines although no evidence exists. However there are some sources in the non hospital environment that are concerning[876]. Whilst hospital sources are outside of the scope of this document a few potential sources of interest include: **Household appliances.** Although there are no specific studies it is commonly accepted that contemporary pacemakers and ICDs are shielded from the microwave energy produced by modern appliances[877] and no special precautions are recommended when using such tgings as televisions, radios, toasters, microwave ovens and electric blankets. However, there is some evidence that a device may be affected in very narrow circumstances eg induction cooker tops if the pot was not placed centrally on the coil and the patient stood as close as possible to the cooker[878]. **Cellular telephones.** Cellular telephones are unlikely to cause clinically significant interference with cardiac devices however the advice offered is that patients should not carry or place a cellular telephone within 15cm of the device[879]. **Portable media players** Small studies have found that portable media players are unlikely to interfere with the intrinsic function of pacemakers or ICDs they are capable of causing programmer interference when placed within 2 inches of the device, but not if 6 inches from the device[880]. Hence the advice is that all portable media players are kept at least 6 inches or 15 cm from the device and that portable headphones are kept at least 3 cm from the device[881]. CB radios or large speakers may potentially cause interference, and patients should be made aware of this possibility. **Security systems** Systems such as antishoplifiting gates and metal detectors are in widespread use. Although device interference is possible and has been reported in case

[874] Pinski SL, Trohman RG. Interference in implanted cardiac devices, Part I. Pacing Clin Electrophysiol. 2002;25(9):1367.
[875] Kolb C, Zrenner B, Schmitt C. Incidence of electromagnetic interference in implantable cardioverter defibrillators. Pacing Clin Electrophysiol. 2001;24(4 Pt 1):465.
[876] Misiri J, Kusumoto F, Goldschlager N. Electromagnetic interference and implanted cardiac devices: the nonmedical environment (part I). Clin Cardiol. 2012 May;35(5):276-80. Epub 2012 Apr 26.
[877] Goldschlager N, Epstein A, Friedman P, Gang E, Krol R, Olshansky B, North American Society of Pacing and Electrophysiology (NASPE) Practice Guideline Committee. Environmental and drug effects on patients with pacemakers and implantable cardioverter/defibrillators: a practical guide to patient treatment. Arch Intern Med. 2001;161(5):649.
[878] Irnich W, Bernstein AD. Do induction cooktops interfere with cardiac pacemakers? Europace. 2006;8(5):377.
[879] Irnich W, Batz L, Müller R, Tobisch R. Electromagnetic interference of pacemakers by mobile phones. Pacing Clin Electrophysiol. 1996;19(10):1431.
[880] Webster G, Jordao L, Martuscello M, Mahajan T, Alexander ME, Cecchin F, Triedman JK, Walsh EP, Berul CI. Digital music players cause interference with interrogation telemetry for pacemakers and implantable cardioverter-defibrillators without affecting device function. Heart Rhythm. 2008;5(4):545.
[881] Lee S, Fu K, Kohno T, Ransford B, Maisel WH. Clinically significant magnetic interference of implanted cardiac devices by portable headphones. Heart Rhythm. 2009 Oct;6(10):1432-6. Epub 2009 Jul 8.

	studies[882] there is no evidence that any clinically significant interference would occur with the transient exposure of walking through such a field. The recommendation is 'don't linger, don't lean' [883]. External electrical activity Potential causes of concern in the workplace and relevant to persons are welders, industrial welding machines, electric motors and degaussing coils. The functional evaluation of pacemakers and ICDs in the workplace has rarely demonstrated any interference however given the concern it is recommended that sources of electromagnetic field in the workplace are assessed before the person returns to work. This is particularly the case in persons who are pacemaker dependent or have an ICD[884]. This recommendation may be restrictive to many persons and may mean that they need to be considered permanently unfit for work at sea. As with all cases a specialist report, probably including input from a cardiac physiologist is essential as part of the individual risk assessment that must be carried out by the seafarer's doctor. Such an assessment should also include the underlying clinical condition and any other comorbidities.
Consequences	**Individual:** Significant to serious consequences, including syncope, transient incapacitation, heart failure symptoms, device malfunction, infection, or need for urgent medical intervention. **Crew:** Minor to significant consequences, including the need to care for an incapacitated colleague, redistribution of duties, and risks associated with emergency response. **Ship:** Minor to serious consequences depending on the individual's role, potential for sudden incapacitation, and the operational context. May necessitate diversion, delay, or crew replacement.
Unmitigated risk	**Individual:** Unacceptable due to the potential for sudden incapacitation, inappropriate shocks, device malfunction, or infection. **Crew:** Unacceptable because sudden incapacitation or shock-related impairment may endanger others. **Ship:** Unacceptable due to the risk of operational disruption and safety hazards. **Overall:** Unmitigated risk is unacceptable for all seafarers with an ICD.
Mitigation	Mitigating measures may include: • Specialist cardiology assessment, including device interrogation

[882] Gimbel JR, Cox JW Jr. Electronic article surveillance systems and interactions with implantable cardiac devices: risk of adverse interactions in public and commercial spaces. Mayo Clin Proc. 2007;82(3):318.
[883] Pinski SL, Trohman RG. Interference in implanted cardiac devices, Part I. Pacing Clin Electrophysiol. 2002;25(9):1367.
[884] Fetter JG, Benditt DG, Stanton MS. Electromagnetic interference from welding and motors on implantable cardioverter-defibrillators as tested in the electrically hostile work site. J Am Coll Cardiol. 1996;28(2):423.

	• Confirmation of device stability and absence of recent shocks or complications • Workplace EMI assessment, particularly for engineering or electrical roles • Restrictions on job tasks or sailing area • Limitation of certificate validity to align with specialist follow-up intervals • Regular follow-up (in person or remote), with at least annual in-person review • Clear documentation of events requiring urgent specialist review
Mitigated risk	Even with mitigation, the risk associated with ICD use generally remains unacceptable for unrestricted maritime service due to the potential for sudden incapacitation and EMI-related malfunction. Mitigated risk may be acceptable only in exceptional cases following detailed specialist assessment and appellate body review.

NEED FOR FOLLOW-UP

Follow-up for individuals with cardiac implantable electronic devices (CIEDs), including pacemakers and ICDs, may be conducted either in person or remotely, depending on the individual's clinical needs and local protocols. It is generally recommended that all patients are reviewed in person initially, and thereafter at least every 12 months [885]. A specialist report should clearly outline:

- the planned follow-up schedule;
- the parameters to be monitored;
- any device-related or clinical events that would necessitate earlier or urgent specialist review;
- any restrictions or precautions relevant to the individual's occupational environment.

INTERACTIONS WITH ELECTROMAGNETIC FIELDS

There has long been concern regarding the potential for electromagnetic interference (EMI) with cardiac implantable devices. Modern devices are well shielded, and the overall risk is considered low. Nevertheless, EMI can occur in both hospital and non-hospital environments, and certain sources warrant attention [886] [887] [888]:

Household appliances.

Although specific studies are limited, contemporary pacemakers and ICDs are generally shielded from microwave energy produced by modern household appliances. No special precautions are typically required when using:

- televisions
- radios
- toasters
- microwave ovens
- electric blankets

[885] Slotwiner D, Varma N, Akar JG, Annas G, Beardsall M, Fogel RI, Galizio NO, Glotzer TV, Leahy RA, Love CJ, McLean RC, Mittal S. HRS Expert Consensus Statement on remote interrogation and monitoring for cardiovascular implantable electronic devices. Heart Rhythm. 2015;12(7):e69.

[886] Pinski SL, Trohman RG. Interference in implanted cardiac devices, Part I. Pacing Clin Electrophysiol. 2002;25(9):1367.

[887] Kolb C, Zrenner B, Schmitt C. Incidence of electromagnetic interference in implantable cardioverter defibrillators. Pacing Clin Electrophysiol. 2001;24(4 Pt 1):465.

[888] Misiri J, Kusumoto F, Goldschlager N. Electromagnetic interference and implanted cardiac devices: the nonmedical environment (part I). Clin Cardiol. 2012 May;35(5):276-80. Epub 2012 Apr 26.

However, isolated reports suggest that induction cooktops may cause interference if:

- the pot is not placed centrally on the coil, and
- the individual stands extremely close to the cooker [889].

Cellular telephones.

Clinically significant interference from mobile phones is unlikely.
Standard advice is that individuals should not carry or place a mobile phone within 15 cm of the device [890].

Portable media players

Small studies indicate that portable media players do not interfere with intrinsic pacemaker or ICD function.
However, they may cause programmer interference when placed within approximately 2 inches (5 cm) of the device, but not at distances of 6 inches (15 cm) or more [891]. Recommendations:

- Keep portable media players ≥15 cm from the device.
- Keep portable headphones ≥3 cm from the device.
- Be aware that CB radios and large speakers may cause interference [892].

Security systems

Anti-shoplifting gates and metal detectors are widely used.
Although interference has been reported in case studies, there is no evidence of clinically significant effects during brief, transient exposure.
Recommended guidance: “Don’t linger, don’t lean.” [893].

External electrical activity

Potentially concerning sources include:

- welding equipment
- industrial welding machines
- large electric motors
- degaussing coils

Functional testing of pacemakers and ICDs in workplace environments has rarely demonstrated interference.
However, due to the potential severity of device malfunction, it is recommended that all workplace EMF sources are assessed before the individual returns to duty, particularly for:

- pacemaker-dependent individuals
- all individuals with an ICD [894].

This requirement may be restrictive and may result in some individuals being considered permanently unfit for work at sea.

A specialist report—ideally including input from a cardiac physiologist—should form part of the individual risk assessment conducted by the seafarer’s doctor. The assessment must also consider:

- the underlying cardiac condition;

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[889] Irnich W, Bernstein AD. Do induction cooktops interfere with cardiac pacemakers? Europace. 2006;8(5):377.
[890] Irnich W, Batz L, Müller R, Tobisch R. Electromagnetic interference of pacemakers by mobile phones. Pacing Clin Electrophysiol. 1996;19(10):1431.
[891] Webster G, Jordao L, Martuscello M, Mahajan T, Alexander ME, Cecchin F, Triedman JK, Walsh EP, Berul CI. Digital music players cause interference with interrogation telemetry for pacemakers and implantable cardioverter-defibrillators without affecting device function. Heart Rhythm. 2008;5(4):545.
[892] Lee S, Fu K, Kohno T, Ransford B, Maisel WH. Clinically significant magnetic interference of implanted cardiac devices by portable headphones. Heart Rhythm. 2009 Oct;6(10):1432-6. Epub 2009 Jul 8.
[893] Pinski SL, Trohman RG. Interference in implanted cardiac devices, Part I. Pacing Clin Electrophysiol. 2002;25(9):1367.
[894] Fetter JG, Benditt DG, Stanton MS. Electromagnetic interference from welding and motors on implantable cardioverter-defibrillators as tested in the electrically hostile work site. J Am Coll Cardiol. 1996;28(2):423.

- comorbidities;
- the individual's specific job tasks and potential EMF exposure.

22.9.5 ISCHAEMIC CEREBROVASCULAR DISEASE (STROKE OR TRANSIENT ISCHAEMIC ATTACK)

I61-69 G46	Ischaemic cerebrovascular disease (stroke or transient ischaemic attack). Increased likelihood of recurrence, sudden loss of capability, mobility limitation. Liable to develop other circulatory disease-causing sudden loss of capability	T – Until treated and any residual impairment stabilised and for three months after event P – If residual symptoms interfere with duties or there is significant likelihood of recurrence.	R, L – Case-by-case assessment of fitness for duties; exclude from lone watchkeeping. Assessment should include likelihood of future cardiac events. General standards of physical fitness should be met (C – Physical capability requirements). Annual assessment.	Not applicable

22.9.5.1 G45 - TRANSIENT ISCHAEMIC ATTACK (TIA)

Reviewed 2026-01-07

Significance	A transient ischaemic attack (TIA) is a clinical warning sign of underlying cerebrovascular or cardiovascular disease. Although symptoms resolve completely, a TIA indicates a substantial risk of subsequent stroke or other vascular events. Studies show that approximately 17% of patients will be dependent and 5% will have died within six months of a TIA, despite full symptom resolution [895]. For seafarers, a TIA is of particular significance because recurrent neurological events may lead to sudden incapacitation, impaired judgement, or loss of functional ability, posing risks to the individual, other crew members, and the safe operation of the vessel.
Possible medical incident(s)	• Recurrent TIA • Ischaemic stroke • Haemorrhagic stroke (less common) Adverse effects of antithrombotic or antihypertensive therapy (e.g., bleeding, hypotension)
Likelihood	**Likelihood of stroke**: A large prospective multinational registry of over 4,700 patients with TIA or minor stroke (modified Rankin Scale 0–1 at presentation) estimated stroke risks of: • 1.5% at 2 days • 2.8% at 30 days • 3.7% at 90 days • 5.1% at 1 year [896].

[895] Daffertshofer M, Mielke O, Pullwitt A, et al. Transient ischemic attacks are more than "ministrokes." Stroke. 2004;35:2453-2458.
[896] Amarenco P, Lavallée PC, Labreuche J, et al. One-Year Risk of Stroke after Transient Ischemic Attack or Minor Stroke. N Engl J Med 2016; 374:1533.

	A 2018 follow-up study reported a 9.5% risk of stroke at five years after the index event [897]. **Risk factors for recurrent stroke:** Independent predictors include: • Multiple infarctions on brain imaging • Large-artery atherosclerosis • ABCD2 score of 6–7 (age, blood pressure, unilateral weakness or speech disturbance, symptom duration, diabetes) Although the ABCD2 score is not designed to predict recurrence, it helps identify patients requiring urgent specialist assessment. **Imaging findings** Findings of acute infarction on diffusion-weighted MRI [898] [899] [900] [901] [902] or acute or chronic ischemic lesions on CT [903] are important predictors of stroke. In patients with an imaging-positive transient event, the 90-day risk of stroke appears to be as high as 14% [904] [905] [906], whilst less than 1% after an imaging-negative transient event.
Consequences	**Individual:** • Sudden neurological impairment, incapacitation, or stroke • Need for urgent medical evaluation, MEDEVAC, or hospitalisation • Potential long-term disability or death **Crew:** • Need to assume duties of the affected individual • Increased workload and stress • Risks associated with emergency response or MEDEVAC **Ship / Operations:** • Operational disruption due to incapacitation of a crew member • Increased workload on remaining crew • Potential need for diversion or crew replacement • Safety risks during critical navigational or engineering tasks
Unmitigated risk	**Individual:** Unacceptable due to the high early risk of recurrent TIA or stroke and the potential for sudden incapacitation.

[897] Amarenco P, Lavallée PC, Monteiro Tavares L, et al. Five-Year Risk of Stroke after TIA or Minor Ischemic Stroke. N Engl J Med 2018; 378:2182.
[898] Ay H, Arsava EM, Johnston SC, et al. Clinical- and imaging-based prediction of stroke risk after transient ischemic attack: the CIP model. Stroke 2009; 40:181.
[899] Calvet D, Touzé E, Oppenheim C, et al. DWI lesions and TIA etiology improve the prediction of stroke after TIA. Stroke 2009; 40:187.
[900] Asimos AW, Rosamond WD, Johnson AM, et al. Early diffusion weighted MRI as a negative predictor for disabling stroke after ABCD2 score risk categorization in transient ischemic attack patients. Stroke 2009; 40:3252.
[901] Purroy F, Montaner J, Rovira A, et al. Higher risk of further vascular events among transient ischemic attack patients with diffusion-weighted imaging acute ischemic lesions. Stroke 2004; 35:2313.
[902] Al-Khaled M, Eggers J. MRI findings and stroke risk in TIA patients with different symptom durations. Neurology 2013; 80:1920.
[903] Sciolla R, Melis F, SINPAC Group. Rapid identification of high-risk transient ischemic attacks: prospective validation of the ABCD score. Stroke 2008; 39:297.
[904] Ay H, Arsava EM, Johnston SC, et al. Clinical- and imaging-based prediction of stroke risk after transient ischemic attack: the CIP model. Stroke 2009; 40:181.
[905] Asimos AW, Rosamond WD, Johnson AM, et al. Early diffusion weighted MRI as a negative predictor for disabling stroke after ABCD2 score risk categorization in transient ischemic attack patients. Stroke 2009; 40:3252.
[906] Giles MF, Albers GW, Amarenco P, et al. Early stroke risk and ABCD2 score performance in tissue- vs time-defined TIA: a multicenter study. Neurology 2011; 77:1222.

	Crew: Unacceptable, as sudden neurological events may compromise team safety and emergency response. **Ship:** Unacceptable in many roles, particularly safety-critical positions, due to the risk of impaired performance or sudden incapacitation. **Overall:** Unmitigated risk is unacceptable until appropriate secondary prevention and specialist evaluation have been completed.
Mitigation	Mitigating measures may include: • Full specialist assessment, including neuroimaging and vascular evaluation • Secondary prevention tailored to the underlying cause, typically including: • Antithrombotic therapy • Blood pressure control • Statin therapy • Smoking cessation • Lifestyle modification • Optimisation of treatment for comorbidities (e.g., diabetes, atrial fibrillation) • Limitation of certificate validity to ensure timely follow-up • Restriction of sailing area to reduce time to hospital care in case of recurrence • Avoidance of safety-critical duties until risk is demonstrably reduced
Mitigated risk	**Individual:** Acceptable only when the underlying cause has been identified and adequately treated, and when the risk of recurrence is demonstrably low. **Crew:** Acceptable once the individual is stable and the likelihood of sudden incapacitation is reduced. **Ship:** May be acceptable in some positions after mitigation; in safety-critical roles, risk may remain unacceptable. **Overall:** Mitigated risk may be acceptable with appropriate secondary prevention, specialist confirmation of stability, and restrictions where necessary. If adequate mitigation cannot be achieved within two years, a permanent declaration of unfitness may be required
Recommendation	• All individuals with a history of TIA require urgent specialist evaluation and documented secondary prevention. • Cases with uncertain risk or requiring conditions not listed in Appendix E should be referred to the appellate body.

22.9.5.2 I63 - ISCHAEMIC STROKE (CEREBRAL INFARCTION)

Reviewed 2026-01-07

Significance	Ischaemic stroke shares pathophysiological features with transient ischaemic attack (TIA) but is typically more severe, with a substantial risk of permanent central nervous system injury and persistent neurological deficits. Acute events require emergency hospitalisation. There is a recognised risk of recurrence and of reduced cognitive or physical capability, either of which may impair safe job performance at sea. **Common causes include:** • Thrombosis • Embolism • Systemic hypoperfusion • Intracerebral hemorrhage • Subarachnoid hemorrhage
Possible medical incident(s)	• Reduced functional capability leading to misunderstanding, errors, or inappropriate reactions • Recurrent TIA or stroke
Likelihood	The likelihood of recurrent stroke is commonly estimated using the National Institutes of Health Stroke Scale (NIHSS). **Major modifiable risk factors [907] [908] [909] [910]:** • Hypertension • Diabetes mellitus • Smoking • Dyslipidemia • Physical inactivity **Factors amenable by secondary prevention:** • Atrial fibrillation • Carotid artery stenosis. **Unmodifiable risk factors:** • Older age, particularly > 80 years • Race and ethnicity (higher risk in Black populations than in White populations) [911] • Sex (higher risk in men, except at ages 35–55 and >85 where risks are similar) [912] [913].

[907] Harmsen P, Lappas G, Rosengren A, Wilhelmsen L. Long-term risk factors for stroke: twenty-eight years of follow-up of 7457 middle-aged men in Göteborg, Sweden. Stroke 2006; 37:1663.
[908] Hankey GJ. Potential new risk factors for ischemic stroke: what is their potential? Stroke 2006; 37:2181.
[909] Grysiewicz RA, Thomas K, Pandey DK. Epidemiology of ischemic and hemorrhagic stroke: incidence, prevalence, mortality, and risk factors. Neurol Clin 2008; 26:871.
[910] O'Donnell MJ, Chin SL, Rangarajan S, et al. Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study. Lancet 2016; 388:761.
[911] Howard VJ. Reasons underlying racial differences in stroke incidence and mortality. Stroke 2013; 44:S126.
[912] Persky RW, Turtzo LC, McCullough LD. Stroke in women: disparities and outcomes. Curr Cardiol Rep 2010; 12:6.
[913] Bushnell C, McCullough LD, Awad IA, et al. Guidelines for the prevention of stroke in women: a statement for healthcare professionals from the American Heart Association/American Stroke Association. Stroke 2014; 45:1545.

	• Family history and genetic disorders [914] [915] [916]. **Hypertension** The single most important treatable risk factor for stroke. Cardiovascular mortality increases progressively as blood pressure rises above 110/75 mmHg [917] [918]. **Smoking** A clear dose–response relationship exists for both ischaemic stroke and subarachnoid haemorrhage. In the Nurses' Health Study, smokers had a relative risk of 2.58 compared with never-smokers [919]. Excess risk in former smokers appears to normalise within 2–4 years after cessation. **Dyslipidemia** Cholesterol is an established risk factor for atherosclerosis, though its association with stroke varies by subtype [920]. Elevated cholesterol shows a weak positive association with ischaemic stroke and an inverse association with haemorrhagic stroke. There is a strong association between cholesterol and carotid atherosclerosis, supporting its role in large-artery ischaemic stroke [921]. **Diabetes mellitus** Individuals with diabetes have approximately twice the risk of ischaemic stroke compared with those without diabetes [922] [923] [924] [925] [926]. **Physical inactivity** Low physical activity and prolonged sedentary behaviour increase the risk of cardiovascular disease, including stroke [927] [928] [929].

[914] Jerrard-Dunne P, Cloud G, Hassan A, Markus HS. Evaluating the genetic component of ischemic stroke subtypes: a family history study. Stroke 2003; 34:1364.
[915] Jood K, Ladenvall C, Rosengren A, et al. Family history in ischemic stroke before 70 years of age: the Sahlgrenska Academy Study on Ischemic Stroke. Stroke 2005; 36:1383.
[916] Meschia JF, Worrall BB, Rich SS. Genetic susceptibility to ischemic stroke. Nat Rev Neurol 2011; 7:369.
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[918] Rapsomaniki E, Timmis A, George J, et al. Blood pressure and incidence of twelve cardiovascular diseases: lifetime risks, healthy life-years lost, and age-specific associations in 1·25 million people. Lancet 2014; 383:1899.
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[920] Yaghi S, Elkind MS. Lipids and Cerebrovascular Disease: Research and Practice. Stroke 2015; 46:3322.
[921] Amarenco P. Lipid lowering and recurrent stroke: another stroke paradox? Eur Heart J 2005; 26:1818.
[922] Arvanitakis Z, Schneider JA, Wilson RS, et al. Diabetes is related to cerebral infarction but not to AD pathology in older persons. Neurology 2006; 67:1960.
[923] Janghorbani M, Hu FB, Willett WC, et al. Prospective study of type 1 and type 2 diabetes and risk of stroke subtypes: the Nurses' Health Study. Diabetes Care 2007; 30:1730.
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[927] O'Donnell MJ, Chin SL, Rangarajan S, et al. Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study. Lancet 2016; 388:761.
[928] Chomistek AK, Manson JE, Stefanick ML, et al. Relationship of sedentary behavior and physical activity to incident cardiovascular disease: results from the Women's Health Initiative. J Am Coll Cardiol 2013; 61:2346.
[929] Gillum RF, Mussolino ME, Ingram DD. Physical activity and stroke incidence in women and men. The NHANES I Epidemiologic Follow-up Study. Am J Epidemiol 1996; 143:860.

	Atrial fibrillation The most common cause of cardioembolic ischaemic stroke. At least 10% of such events are attributable to atrial fibrillation [930] [931] [932]. **Likelihood of negative outcome after stroke or TIA** Patients who have experienced a stroke or TIA remain at high long-term risk. • In one study [933], mortality was the most common negative outcome (5.4% at 1 year; 26.8% at 5 years). • Recurrent stroke occurred in 2.6% at 1 year and 7.9% at 2 years. • Among survivors beyond the first year, the event rate remained approximately 5% per year at both 3 and 5 years. • The National Stroke Association reports that 25–35% of Americans who experience a stroke will have another during their lifetime, and that within 5 years the risk of recurrence may exceed 40% [934]. • Within 5 years of a stroke 24% of women and 42% of men with experience a recurrent stroke. • Recurrent strokes are associated with higher morbidity and disability.
Consequences	**Individual:** • May be unable to work due to residual neurological symptoms. • Recurrent stroke may be severe and require urgent hospitalisation. **Crew:** • Increased workload due to compensating for a colleague with reduced function. • Acute relapse may require immediate redistribution of duties. **Ship:** • Impaired job performance may compromise safety-critical tasks. • New events may necessitate onboard treatment, MEDEVAC, crew replacement, and operational disruption.
Unmitigated risk	**Individual:** Usually unacceptable due to: Reduced physical or cognitive performance incompatible with essential job tasks and risk of relapse or sudden neurological deterioration. **Crew:** Unacceptable, as sudden neurological events may compromise team safety, coordinated operations, and the ability to respond effectively in emergencies. **Ship:** Usually unacceptable in many roles—particularly safety-critical positions—because of the risk of impaired performance or sudden incapacitation, with potential consequences for vessel safety and operational continuity.

[930] Lloyd-Jones DM, Wang TJ, Leip EP, et al. Lifetime risk for development of atrial fibrillation: the Framingham Heart Study. Circulation 2004; 110:1042.
[931] Go AS, Hylek EM, Chang Y, et al. Anticoagulation therapy for stroke prevention in atrial fibrillation: how well do randomized trials translate into clinical practice? JAMA 2003; 290:2685.
[932] Singer DE, Chang Y, Fang MC, et al. The net clinical benefit of warfarin anticoagulation in atrial fibrillation. Ann Intern Med 2009; 151:297.
[933] Richard H Swartz, Jiming Fang, Moira K Kapral. High 1- to 5-Year Mortality and Morbidity in Stable Patients Without Early Complications After Stroke or TIA. Stroke. 2014;45:ATMP93
[934] http://www.stroke.org/we-can-help/survivors/stroke-recovery/first-steps-recovery/preventing-another-stroke

	Overall Unmitigated risk is unacceptable until appropriate secondary prevention, stabilisation, and specialist evaluation have been completed.
Mitigation	• Treatment and secondary prevention tailored to the underlying cause and associated comorbidities. • Limitation of the validity period of the medical certificate may be necessary. • Restriction of sailing area may be required to ensure timely access to hospital care in the event of relapse. • Restriction from safety-critical duties may be necessary depending on residual deficits, recurrence risk, and the individual's functional capability.
Mitigated risk	• **Individual:** Ranges from acceptable to not acceptable, depending on individual assessment. • **Crew:** Acceptable if adequately mitigated. • **Ship:** Acceptable if mitigated; otherwise not acceptable.
Recommendation	All individuals who have suffered a stroke or TIA must undergo full assessment within a specialist unit. A specialist report must be obtained, outlining—at minimum—the cause of the event, relevant comorbidities and their treatment, required secondary prevention measures, the risk of future thromboembolic or cardiac events, and any necessary follow-up. This report must inform an individualised risk assessment that considers: • cerebrovascular events and other comorbidities • treatment and secondary prevention • physical and cognitive capability • the individual's role, work environment, and ability to perform routine and emergency duties

22.9.5.3 I65 - CAROTID STENOSIS

Reviewed 2026-01-08

Significance	Carotid stenosis reflects atherosclerotic narrowing at the carotid bifurcation and may be asymptomatic or associated with focal neurological symptoms in the carotid artery distribution. Asymptomatic carotid stenosis is relatively uncommon in the general population, with prevalence increasing with age [935] [936] [937]. The condition is clinically important because it is a recognised cause of ischaemic stroke, particularly when stenosis progresses or when plaque morphology becomes unstable.

[935] Abbott AL. Medical (nonsurgical) intervention alone is now best for prevention of stroke associated with asymptomatic severe carotid stenosis: results of a systematic review and analysis. Stroke 2009; 40:e573.
[936] de Weerd M, Greving JP, Hedblad B, Lorenz MW, Mathiesen EB, O'Leary DH, Rosvall M, Sitzer M, Buskens E, Bots ML. Prevalence of asymptomatic carotid artery stenosis in the general population: an individual participant data meta-analysis. Stroke. 2010;41(6):1294.
[937] Spence JD. Management of asymptomatic carotid stenosis. Neurol Clin 2015; 33:443.

	Carotid stenosis may therefore pose a risk to the health and safety of the individual, other crew members, and the safe operation of the ship, particularly if a stroke or transient ischaemic attack (TIA) occurs while at sea.
Possible medical incident(s)	• Ischaemic stroke • Transient ischaemic attack (TIA) preceding stroke These events may lead to sudden neurological impairment, loss of functional capability, or inability to perform safety-critical duties.
Likelihood	**Likelihood of ischemic stroke:** n asymptomatic individuals with carotid stenosis >50%, the annual risk of ischaemic stroke is approximately 0.5–1% per year [938]. The majority of strokes are preceded by TIA [939]. This corresponds to a very low to low likelihood according to the regulatory categories. **Progression of stenosis** Retrospective analysis from the ACST trial demonstrated an annual progression rate of approximately 5% in luminal narrowing [940]. Rapid progression over one year is significantly associated with ipsilateral neurological events. Asymptomatic carotid atherosclerosis is a marker of increased risk for myocardial infarction and vascular death. It is considered a coronary heart disease risk equivalent, with a 10-year risk of coronary events exceeding 20% (≈2% per year) [941]. **Markers of higher stroke risk in asymptomatic disease** [942] [943] [944] • Progression of stenosis despite optimal medical therapy • Asymptomatic carotid embolism • High-risk plaque morphology (e.g., ulceration, intraplaque haemorrhage) • Reduced cerebrovascular or vertebral blood-flow reserve • Ipsilateral silent embolic infarcts on neuroimaging **Treshold for intervention.** Carotid endarterectomy (CEA) is generally considered when stenosis exceeds 70–75%, or when the residual lumen diameter is ≤1.5 mm [945] [946] [947] [948] [949].

[938] Marquardt L, Geraghty OC, Mehta Z, Rothwell PM. Low risk of ipsilateral stroke in patients with asymptomatic carotid stenosis on best medical treatment: a prospective, population-based study.AUMarquardt L, Geraghty OC, Mehta Z, Rothwell PM. Stroke. 2010;41(1):e11.
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[940] Hirt LS. Progression rate and ipsilateral neurological events in asymptomatic carotid stenosis. Stroke 2014; 45:702.
[941] Wong ND, Budoff MJ, Ferdinand K, Graham IM, Michos ED, Reddy T, Shapiro MD, Toth PP. Atherosclerotic cardiovascular disease risk assessment: An American Society for Preventive Cardiology clinical practice statement. Am J Prev Cardiol. 2022 Mar 15;10:100335. doi: 10.1016/j.ajpc.2022.100335. PMID: 35342890; PMCID: PMC8943256.
[942] Gaba K, Bulbulia R. Identifying asymptomatic patients at high-risk for stroke. J Cardiovasc Surg (Torino) 2019; 60:332.
[943] Paraskevas KI, Veith FJ, Spence JD. How to identify which patients with asymptomatic carotid stenosis could benefit from endarterectomy or stenting. Stroke Vasc Neurol 2018; 3:92.
[944] Bogiatzi C, Azarpazhooh MR, Spence JD. Choosing the right therapy for a patient with asymptomatic carotid stenosis. Expert Rev Cardiovasc Ther 2020; 18:53.
[945] Shanik GD, Moore DJ, Leahy A, et al. Asymptomatic carotid stenosis: a benign lesion? Eur J Vasc Surg 1992; 6:10.
[946] Norris JW, Zhu CZ. Stroke risk and critical carotid stenosis. J Neurol Neurosurg Psychiatry 1990; 53:235.
[947] Kistler JP, Furie KL. Carotid endarterectomy revisited. N Engl J Med 2000; 342:1743.
[948] Suwanwela N, Can U, Furie KL, et al. Carotid Doppler ultrasound criteria for internal carotid artery stenosis based on residual lumen diameter calculated from en bloc carotid endarterectomy specimens. Stroke 1996; 27:1965.
[949] Can U, Furie KL, Suwanwela N, et al. Transcranial Doppler ultrasound criteria for hemodynamically significant internal carotid artery stenosis based on residual lumen diameter calculated from en bloc endarterectomy specimens. Stroke 1997; 28:1966.

Consequences	**Individual:** • Asymptomatic under observation: consequences generally minor, provided stability is confirmed. • Significant stenosis awaiting CEA or with high-risk plaque: consequences may be serious due to risk of stroke and sudden neurological impairment. **Crew:** • Consequences range from minor to unacceptable depending on severity and stability. • Sudden neurological events may compromise coordinated operations and emergency response. **Ship:** • Consequences range from minor to unacceptable. • Stroke or TIA at sea may impair performance of safety-critical tasks, require MEDEVAC, or disrupt operations.
Unmitigated risk	**Individual:** Usually unacceptable in moderate–severe stenosis due to: • Risk of stroke or TIA • Potential for sudden neurological impairment incompatible with safe performance of duties **Crew:** Unacceptable, as sudden neurological events may compromise team safety and emergency preparedness. **Ship:** Usually unacceptable, particularly in safety-critical roles, due to the risk of sudden incapacitation and operational disruption. **Overall:** Unmitigated risk is unacceptable until specialist evaluation, stabilisation, and secondary prevention have been completed.
Mitigation	• Specialist assessment and regular follow-up. • Secondary prevention (e.g., antiplatelet therapy, lipid-lowering therapy, blood-pressure control). • Surgical or endovascular intervention (CEA or stenting) when indicated. • Limitation of the validity period of the medical certificate. • Restriction of sailing area to ensure timely access to hospital care. • Restriction from safety-critical duties where appropriate.
Mitigated risk	**Individual:** From acceptable to unacceptable depending on: • Degree of stenosis • Stability on imaging • Presence of high-risk plaque features • Adequacy of secondary prevention • Specialist recommendations **Crew:** Mostly acceptable if adequately mitigated and if the individual is stable and appropriately restricted. **Ship** From acceptable to unacceptable depending on role, vessel type, and operational profile.

Recommendation	Any person with documented carotid stenosis—symptomatic or asymptomatic—must be assessed in a specialist centre, and all treatment options considered. A specialist report should be obtained, detailing: • Degree of stenosis • Risk of complications over the validity period of the certificate • Presence of high-risk plaque features • Comorbidities and their management • Treatment provided or planned • Need for follow-up This report must form part of an individualised risk assessment.

22.9.6 I73 - ARTERIAL CLAUDICATION

I 73	Arterial claudication. Likelihood of other circulatory diseases causing sudden loss of capability. Limits to exercise capacity.	T – Until assessed. P – If incapable of performing duties	R, L – Consider restriction to non-watchkeeping duties in coastal waters provided symptoms are minor and do not impair essential duties or if they are resolved by surgery or other treatment and general standard of fitness can be met (Appendix C). Assess likelihood of future cardiac events (follow criteria in I20-25). Review at least annually.	Not applicable

Reviewed 2026-01-12

Significance	**Peripheral arterial disease (PAD)** of the lower extremities is relevant in the maritime medical selection context because it may impair a seafarer's capacity to perform physically demanding tasks safely and effectively. PAD may present with intermittent claudication, limiting walking distance and endurance, or may progress to critical limb ischaemia, which constitutes a limb-threatening condition. In addition, PAD is a recognised marker of systemic atherosclerosis and is strongly associated with an increased likelihood of cardiovascular and cerebrovascular events. These factors may pose risks to the health and safety of the individual, to other persons on board, and to the safe operation of the vessel.
Possible medical incident(s)	• Reduced physical capacity due to exertional leg pain. • Acute cardiovascular ischaemic events (e.g., myocardial infarction, stroke). • Acute limb ischaemia or gangrene if arterial occlusion becomes complete. • Requirement for urgent medical evacuation or specialist intervention.
Likelihood	Individuals with PAD have a substantially increased risk of cardiovascular morbidity and mortality, irrespective of symptom severity. Annual cardiovascular event rates of 5–7% have been reported in patients with PAD [950]. The study shows that PAD is associated with: • 20% to 60% increased risk for myocardial infarction and

[950] Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FG, TASC II Working Group; Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II). J Vasc Surg. 2007;45 Suppl S:S5.

	• 2- to 6-fold increased risk of death due to coronary heart disease events. • The risk of stroke is increased by 40%. Progression from asymptomatic PAD to symptomatic ischaemia requiring intervention is generally low. Decline in the Ankle–Brachial Index (ABI) correlates with the initial ABI value, with more rapid deterioration in those with lower baseline ABI [951]. Risk factors for developing intermittent claudication in asymptomatic PAD include: • Elevated serum cholesterol (odds ratio 1.2 per 1 mmol/L increase), • Cigarette smoking (odds ratio 1.4 per 10 cigarettes/day), • Mild to moderate hypertension (odds ratio 1.5–2.2), • Diabetes mellitus (odds ratio 2.6) [952]. In individuals with diabetes, approximately 28% show disease progression irrespective of symptoms) [953]. For patients with intermittent claudication, disease progression is typically slow. Five-year outcomes include [954] [955] [956]: • 70–80% stable symptoms. • 10–20% worsening claudication. • 1–2% progression to limb-threatening ischaemia. • 20% non-fatal myocardial infarction or stroke. • 15–20% mortality, of which 75% is due to cardiovascular causes 20% nonfatal myocardial infarction or stroke • 15-20% death (75% due to cardiovascular causes). Risk factors for chronic limb-threatening ischaemia include [957] [958]: • Diabetes mellitus (fourfold increase) [Reference needed]. • Smoking (threefold increase) [Reference needed]. • Hypercholesterolaemia (twofold increase) [Reference needed].

[951] Nicoloff AD, Taylor LM Jr, Sexton GJ et al. Relationship between site of initial symptoms and subsequent progression of disease in a prospective study of atherosclerosis progression in patients receiving long-term treatment for symptomatic peripheral arterial disease: J Vasc Surg. 2002;35(1):38.
[952] Murabito JM, D'Agostino RB, Silbershatz H, Wilson WF. Intermittent claudication. A risk profile from The Framingham Heart Study: Circulation. 1997;96(1):44.
[953] Leibson CL, Ransom JE, Olson W, Zimmerman BR, O'fallon WM, Palumbo PJ. Diabetes Care. 2004 Dec;27(12):2843-9: Circulation. 1997;96(1):44.
[954] 2011 WRITING GROUP MEMBERS, 2005 WRITING COMMITTEE MEMBERS, ACCF/AHA TASK FORCE MEMBERS. 2011 ACCF/AHA Focused Update of the Guideline for the Management of patients with peripheral artery disease (Updating the 2005 Guideline): a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. Circulation 2011; 124:2020.
[955] Hirsch AT, Haskal ZJ, Hertzer NR, et al. ACC/AHA 2005 Practice Guidelines for the management of patients with peripheral arterial disease (lower extremity, renal, mesenteric, and abdominal aortic): a collaborative report from the American Association for Vascular Surgery/Society for Vascular Surgery, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine and Biology, Society of Interventional Radiology, and the ACC/AHA Task Force on Practice Guidelines (Writing Committee to Develop Guidelines for the Management of Patients With Peripheral Arterial Disease): endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation; National Heart, Lung, and Blood Institute; Society for Vascular Nursing; TransAtlantic Inter-Society Consensus; and Vascular Disease Foundation. Circulation 2006; 113:e463.
[956] Gerhard-Herman MD, Gornik HL, Barrett C, et al. 2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation 2017; 135:e726.
[957] https://www.uptodate.com/contents/epidemiology-risk-factors-and-natural-history-of-lower-extremity-peripheral-artery-disease/abstract/62
[958] Aquino R, Johnnides C, Makaroun M, et al. Natural history of claudication: long-term serial follow-up study of 1244 claudicants. J Vasc Surg 2001; 34:962.

	Early-onset atherosclerosis (PAD before age 50) carries a poorer prognosis, with reported risks of [959]: • 8% transient ischaemic attack, • 9% stroke, • 60% coronary artery disease, • 62% requiring surgery for chronic ischaemia, • 38% progression after revascularization. **Likelihood category:** **For cardiovascular events:** Moderate to High (5–7% per year; >10% in some subgroups). **For progression of claudication**: Very Low to Low (1–20% over five years). **For limb-threatening ischaemia:** Very Low (1–2% over five years).
Consequences	**Individual:** May range from minor limitations in walking distance to severe ischaemia requiring urgent intervention. Cardiovascular events may cause sudden incapacity. **Crew:** Generally minor, unless acute cardiovascular events occur, which may require immediate assistance. **Ship/operations:** Minor to significant. Reduced physical capacity may impair performance of safety-critical duties. Acute cardiovascular events or limb ischaemia may necessitate diversion or medical evacuation.
Unmitigated risk	**Individual:** Potentially unacceptable in cases with significant claudication, unstable symptoms, or high cardiovascular risk, due to the likelihood of sudden incapacitation or progression to critical limb ischaemia. **Crew:** Usually acceptable unless the individual's duties require high physical exertion or rapid mobility. **Ship:** May be unacceptable if reduced physical capacity or risk of acute cardiovascular events could compromise safety-critical tasks or necessitate unscheduled medical evacuation.
Mitigation	• Optimisation of cardiovascular risk factors (smoking cessation, lipid-lowering therapy, blood pressure control, diabetes management). • Supervised exercise therapy where available. • Antiplatelet therapy and other guideline-directed medical treatment • Surgical or endovascular revascularisation where indicated. • Regular specialist follow-up to assess stability and progression. • Restriction of duties to non-watchkeeping or non-safety-critical roles where appropriate. • Restriction to coastal waters if rapid access to medical care is required.
Mitigated risk	**Individual:** May be acceptable in cases with mild, stable symptoms and well-controlled risk factors. Unacceptable where symptoms are severe, rapidly progressive, or associated with high cardiovascular risk**.**

[959] Valentine RJ, Myers SI, Inman MH, et al. Late outcome of amputees with premature atherosclerosis. Surgery 1996; 119:487.

	Crew: Usually acceptable following effective mitigation. **Ship:** May remain unacceptable if physical limitations persist or if the likelihood of requiring medical evacuation remains elevated.
Recommendation	Specialist vascular or cardiology assessment is recommended to evaluate disease severity, cardiovascular risk, and likelihood of progression within the certificate period. Objective documentation (e.g., ABI measurement, imaging, functional assessment) should support the decision.

22.9.7 I83 - VARICOSE VEINS

I 83	Varicose veins. Possibility of bleeding if injured, skin changes and ulceration.	T – Until treated if impairing symptoms. Post-surgery for up to one month	Not applicable	No impairing symptoms or complications

Reviewed 2026-01-12

Significance	Varicose veins are common and usually benign, but in a maritime occupational context they may impair a seafarer's ability to perform physically demanding tasks, particularly when associated with discomfort, swelling, or heaviness of the legs. In more advanced cases, complications such as thrombophlebitis, skin changes, ulceration, or bleeding may occur. These complications may reduce functional capacity, require medical treatment, or—rarely—necessitate medical evacuation. The condition therefore has potential implications for the health and safety of the individual, the crew, and the safe operation of the vessel.
Possible medical incident(s)	• Reduced physical function due to pain, swelling, or discomfort. • In severe or complicated cases: • Superficial thrombophlebitis. • Skin changes or venous ulceration. • Bleeding from traumatised varicosities. • Requirement for medical evacuation or urgent treatment.
Likelihood	Progression from mild varicose veins to more severe chronic venous disease is influenced by several factors, including [960] [961] [962] [963]: • Advancing age. • Female sex • Family history of venous disease • Ligamentous laxity (hernia, flat feet) • Prolonged standing • Increased body mass index • Smoking • Lower extremity trauma

[960] Brand FN, Dannenberg AL, Abbott RD, Kannel WB. The epidemiology of varicose veins: the Framingham Study. Am J Prev Med 1988; 4:96.
[961] Callam MJ. Epidemiology of varicose veins. Br J Surg 1994; 81:167.
[962] Chiesa R, Marone EM, Limoni C, et al. Chronic venous disorders: correlation between visible signs, symptoms, and presence of functional disease. J Vasc Surg 2007; 46:322.
[963] Salim S, Machin M, Patterson BO, et al. Global Epidemiology of Chronic Venous Disease: A Systematic Review With Pooled Prevalence Analysis. Ann Surg 2021; 274:971.

	• Prior venous thrombosis • Some hereditary conditions • High estrogen states and higher parity. Chronic venous disease is a recognised cause of lower-extremity ulceration, often in combination with comorbidities such as diabetes (35%), lymphoedema (42%), and rheumatoid arthritis (26%) [964] [965] [966] [967] [968]. Venous ulcers are most common in individuals over 65 years of age and are therefore relatively uncommon among younger seafarers. One study has reported a 36% increased risk of coronary artery disease in men with varicose veins [969]. **Likelihood category:** **Progression to complications**: Very Low to Low, depending on age and comorbidities. **Development of venous ulceration**: Very Low in typical seafaring age groups. **Bleeding or thrombophlebitis:** Very Low.
Consequences	**Individual:** Usually minimal impact on working capacity. In severe or complicated cases, pain, swelling, ulceration, or bleeding may significantly impair mobility and ability to perform duties. **Crew:** May need to assume additional tasks if the affected individual's working capacity is reduced; rarely, assistance may be required during medical evacuation. **Ship:** Generally minor impact. In rare cases of ulceration, thrombophlebitis, or bleeding, reduced working capacity or the need for medical evacuation may affect operations.
Unmitigated risk	**Individual:** Acceptable in asymptomatic or mildly symptomatic cases. Potentially unacceptable in cases with ulceration, recurrent thrombophlebitis, or bleeding, due to impaired mobility and risk of deterioration. **Crew:** Usually acceptable unless the individual's symptoms significantly limit physical performance. **Ship:** Acceptable in mild cases; may become unacceptable in severe cases where complications could impair safety-critical duties or necessitate medical evacuation.
Mitigation	**Asymptomatic cases:** • No treatment required.

[964] Abbade LP, Lastória S, Rollo Hde A. Venous ulcer: clinical characteristics and risk factors. Int J Dermatol 2011; 50:405.
[965] Moffatt CJ, Franks PJ, Doherty DC, et al. Prevalence of leg ulceration in a London population. QJM 2004; 97:431.
[966] Margolis DJ, Bilker W, Santanna J, Baumgarten M. Venous leg ulcer: incidence and prevalence in the elderly. J Am Acad Dermatol 2002; 46:381.
[967] O'Brien JF, Grace PA, Perry IJ, Burke PE. Prevalence and aetiology of leg ulcers in Ireland. Ir J Med Sci 2000; 169:110.
[968] Forssgren A, Nelzén O. Changes in the aetiological spectrum of leg ulcers after a broad-scale intervention in a defined geographical population in Sweden. Eur J Vasc Endovasc Surg 2012; 44:498.
[969] Scott TE, Mendez MV, LaMorte WW, et al. Are varicose veins a marker for susceptibility to coronary heart disease in men? Results from the Normative Aging Study. Ann Vasc Surg 2004; 18:459.

	Symptomatic cases: • Non-operative measures such as skin care, leg elevation, exercise, and compression therapy, which generally do not interfere with normal working capacity. **Chronic or complicated cases:** • Superficial venous ablation or other definitive interventions when clinically indicated .[970] [971]. • Optimisation of modifiable risk factors (e.g., weight reduction, smoking cessation). • Post-operative recovery period (typically up to one month) before resuming full duties
Mitigated risk	**Individual:** Usually acceptable following appropriate treatment or conservative management. Temporary unfitness may be required during recovery from surgery. Unacceptable in cases with persistent ulceration, recurrent thrombophlebitis, or significant functional impairment. **Crew:** Acceptable provided the individual maintains adequate working capacity. **Ship:** Acceptable in mild or well-managed cases; may remain unacceptable in severe cases with ongoing complications or reduced physical capacity.
Recommendation	Attention should be given to identifying and addressing modifiable risk factors. In cases with complications or uncertainty regarding progression, specialist vascular assessment may be appropriate to support the fitness-for-duty evaluation.

22.9.8 DEEP VEIN THROMBOSIS AND PULMONARY EMBOLI

I80 I26	Deep vein thrombosis/pulmonary embolus Likelihood of recurrence and of serious pulmonary embolus. Likelihood of bleeding from anticoagulant treatment.	T – Until investigated and treated and normally while on short-term anticoagulants P – Consider if recurrent events or on permanent anticoagulants	R, L – May be considered fit for work with a low liability for injury; in near-coastal waters; once stabilised on anticoagulants with regular monitoring of level of anticoagulation	Full recovery with no anticoagulant use

22.9.8.1 I80 - DEEP VEIN THROMBOSIS

Reviewed 2026-01-12

Significance	Deep vein thrombosis (DVT) is a condition of importance in the maritime medical selection context because it may impair mobility, cause pain and swelling, and lead to long-term complications such as post-thrombotic

[970] Marston W, Fish D, Unger J, Keagy B. Incidence of and risk factors for iliocaval venous obstruction in patients with active or healed venous leg ulcers. J Vasc Surg 2011; 53:1303.
[971] Gloviczki P, Bergan JJ, Menawat SS, et al. Safety, feasibility, and early efficacy of subfascial endoscopic perforator surgery: a preliminary report from the North American registry. J Vasc Surg 1997; 25:94.

	syndrome. The condition may arise from hereditary or acquired risk factors. In addition, recurrence is common, and anticoagulant therapy—often required for prevention—carries a risk of bleeding. Both recurrence and bleeding may affect the health and safety of the individual, the crew, and the safe operation of the vessel. Common risk factors include: • Immobilisation or prolonged hospitalisation. • Recent surgery or trauma (typically within 12 weeks). • Obesity. • Previous venous thromboembolism (VTE). • Malignancy or symptoms suggestive of malignancy. • Use of oral contraceptives or hormone replacement therapy. • Pregnancy or postpartum status. • Stroke with hemiplegia or immobility. • Age >65 years. • Family history of VTE. • Heart failure. • Inflammatory bowel disease. In some cases, the underlying cause (e.g., malignancy, thrombophilia) may itself be relevant to fitness for duty.
Possible medical incident(s)	• Recurrent DVT. • Bleeding complications related to anticoagulant therapy. • Post-thrombotic syndrome (chronic pain, swelling, skin changes). • Complications arising from underlying disease.
Likelihood	**Recurrence of DVT** [972]: • First unprovoked episode: 10% first year, 5% per year thereafter • Second unprovoked episode: 15% first year, 7.5% per year thereafter • First episode provoked by surgery: 1% for the first year, 0.5% per year thereafter • First episode provoked by a non-surgical factor: 5% for the first year, 2.5% per year thereafter **Cumulative recurrence risk** [973]: • 7 days: 0.2% • 30 days: 1% • 180 days: 4% • 1 year: 6% • 10 years: 18%

[972] Kearon C, Akl EA, Comerota AJ, et al. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012; 141:e419S.
[973] Heit JA, Mohr DN, Silverstein MD, et al. Predictors of recurrence after deep vein thrombosis and pulmonary embolism: a population-based cohort study. Arch Intern Med 2000; 160:761.

	After cessation of anticoagulation following a first unprovoked DVT, recurrence risk is approximately 10% at one year and 30% at five years (≈5% per year after the first year) [974] [975] [976] [977]. **The likelihood of bleeding:** Meta-analyses report: • A 2.6-fold increase in major bleeding when anticoagulation is continued beyond three months. • Absolute major bleeding rate: 2.7 per 100 patient-years. • Case fatality rate for major bleeding: 9.1% [978] [979]. • Another meta-analysis of 3965 patients reported a major bleeding rate of 0.45 per 100 patient-years and a fatal bleeding rate og 0.14 per 100 patient-years[980]. Bleeding risk increases with the number of individual risk factors. No validated bleeding-risk prediction tools exist specifically for VTE[981] [982] [983] [984] [985] [986]; clinical judgement is therefore required.

[974] Kearon C, Akl EA, Comerota AJ, et al. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012; 141:e419S.
[975] Baglin T, Bauer K, Douketis J, et al. Duration of anticoagulant therapy after a first episode of an unprovoked pulmonary embolus or deep vein thrombosis: guidance from the SSC of the ISTH. J Thromb Haemost 2012; 10:698.
[976] Iorio A, Kearon C, Filippucci E, et al. Risk of recurrence after a first episode of symptomatic venous thromboembolism provoked by a transient risk factor: a systematic review. Arch Intern Med 2010; 170:1710.
[977] Boutitie F, Pinede L, Schulman S, et al. Influence of preceding length of anticoagulant treatment and initial presentation of venous thromboembolism on risk of recurrence after stopping treatment: analysis of individual participants' data from seven trials. BMJ 2011; 342:d3036.
[978] Kearon C, Akl EA, Comerota AJ, et al. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012; 141:e419S.
[979] Linkins LA, Choi PT, Douketis JD. Clinical impact of bleeding in patients taking oral anticoagulant therapy for venous thromboembolism: a meta-analysis. Ann Intern Med 2003; 139:893.
[980] Castellucci LA, Le Gal G, Rodger MA, Carrier M. Major bleeding during secondary prevention of venous thromboembolism in patients who have completed anticoagulation: a systematic review and meta-analysis. J Thromb Haemost 2014; 12:344.
[981] Kearon C, Akl EA, Comerota AJ, et al. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012; 141:e419S.
[982] Wells PS, Forgie MA, Simms M, et al. The outpatient bleeding risk index: validation of a tool for predicting bleeding rates in patients treated for deep venous thrombosis and pulmonary embolism. Arch Intern Med 2003; 163:917.
[983] Beyth RJ, Quinn LM, Landefeld CS. Prospective evaluation of an index for predicting the risk of major bleeding in outpatients treated with warfarin. Am J Med 1998; 105:91.
[984] Scherz N, Méan M, Limacher A, et al. Prospective, multicenter validation of prediction scores for major bleeding in elderly patients with venous thromboembolism. J Thromb Haemost 2013; 11:435.
[985] Poli D, Antonucci E, Testa S, et al. The predictive ability of bleeding risk stratification models in very old patients on vitamin K antagonist treatment for venous thromboembolism: results of the prospective collaborative EPICA study. J Thromb Haemost 2013; 11:1053.
[986] Riva N, Bellesini M, Di Minno MN, et al. Poor predictive value of contemporary bleeding risk scores during long-term treatment of venous thromboembolism. A multicentre retrospective cohort study. Thromb Haemost 2014; 112:511.

	The estimated lifetime risk of recurrent VTE can be dramatically reduced by extending anticoagulation beyond the conventional three to six months [987] [988] [989] [990] [991] [992] [993] [994]. **Likelihood Category** • **Recurrence of DVT**: Low to High, depending on provoking factors and history. • Major bleeding on anticoagulation: Very Low to Low. • Fatal bleeding: Very Low.
Consequences	**Individual:** Recurrent thrombosis requiring medical treatment; chronic pain or swelling; risk of major bleeding if anticoagulated, particularly in occupations with injury risk. **Crew:** May need to assume duties of an incapacitated colleague; may need to assist in medical evacuation. **Ship:** Potential for reduced working capacity, need for diversion or MEDEVAC, and operational disruption.
Unmitigated risk	**Individual:** Potentially unacceptable due to recurrence risk and the possibility of bleeding if anticoagulated, especially when working far from medical care. **Crew:** Acceptable unless the individual is at high risk of sudden deterioration. **Ship:** May be unacceptable if recurrence or bleeding could impair safety-critical duties or necessitate emergency evacuation.
Mitigation	• Hospitalisation and acute management in initial episodes. • Prevention of recurrence through anticoagulation therapy with appropriate monitoring. • Avoidance of tasks with high risk of injury while on anticoagulants. • Stabilisation on long-term anticoagulation where indicated. • Restriction to near-coastal waters where rapid access to medical care is available. • Investigation and management of underlying causes (e.g., malignancy, thrombophilia).

[987] Iorio A, KePoli D, Antonucci E, Testa S, et al. The predictive ability of bleeding risk stratification models in very old patients on vitamin K antagonist treatment for venous thromboembolism: results of the prospective collaborative EPICA study. J Thromb Haemost 2013; 11:1053.aron C, Filippucci E, et al. Risk of recurrence after a first episode of symptomatic venous thromboembolism provoked by a transient risk factor: a systematic review. Arch Intern Med 2010; 170:1710.

[988] Boutitie F, Pinede L, Schulman S, et al. Influence of preceding length of anticoagulant treatment and initial presentation of venous thromboembolism on risk of recurrence after stopping treatment: analysis of individual participants' data from seven trials. BMJ 2011; 342:d3036.

[989] Baglin T, Douketis J, Tosetto A, et al. Does the clinical presentation and extent of venous thrombosis predict likelihood and type of recurrence? A patient-level meta-analysis. J Thromb Haemost 2010; 8:2436.

[990] Agnelli G, Prandoni P, Santamaria MG, et al. Three months versus one year of oral anticoagulant therapy for idiopathic deep venous thrombosis. Warfarin Optimal Duration Italian Trial Investigators. N Engl J Med 2001; 345:165.

[991] Douketis JD, Crowther MA, Foster GA, Ginsberg JS. Does the location of thrombosis determine the risk of disease recurrence in patients with proximal deep vein thrombosis? Am J Med 2001; 110:515.

[992] Kovacs MJ, Kahn SR, Wells PS, et al. Patients with a first symptomatic unprovoked deep vein thrombosis are at higher risk of recurrent venous thromboembolism than patients with a first unprovoked pulmonary embolism. J Thromb Haemost 2010; 8:1926.

[993] Couturaud F, Sanchez O, Pernod G, et al. Six Months vs Extended Oral Anticoagulation After a First Episode of Pulmonary Embolism: The PADIS-PE Randomized Clinical Trial. JAMA 2015; 314:31.

[994] Kyrle PA, Kammer M, Eischer L, et al. The long-term recurrence risk of patients with unprovoked venous thromboembolism: an observational cohort study. J Thromb Haemost 2016; 14:2402.

	• Use of compression therapy and lifestyle modification to reduce post-thrombotic symptoms.
Mitigated risk	**Individual:** Acceptable in near-coastal waters once stabilised on anticoagulation and monitored; unacceptable for remote voyages or high-injury-risk duties. **Crew:** Acceptable following mitigation. **Ship:** Acceptable if the individual is stable, monitored, and assigned duties with low injury risk.

22.9.8.2 I26 - PULMONARY EMBOLISM

Significance	Pulmonary embolism (PE) is an acute and potentially life-threatening condition. Clinical presentation may vary from mild, non-specific symptoms to sudden collapse and death, and misdiagnosis is not uncommon. In the context of maritime medical selection, the principal concerns relate to the risk of recurrence, the need for urgent hospitalisation in acute episodes, the side effects and bleeding risks associated with secondary prevention (anticoagulant therapy), and the limited availability of appropriate diagnostic and therapeutic resources on board. These factors may pose significant risks to the health and safety of the individual, the crew, and the safe operation of the vessel.
Possible medical incident(s)	• Acute episode of pulmonary embolism, potentially severe or fatal. • Recurrent embolic events. • Bleeding complications related to anticoagulant therapy. • Complications arising from underlying disease (e.g., malignancy). • Requirement for urgent medical evacuation.
Likelihood	**Mortality** Estimated mortality rates following PE are: • 4% at 30 days. • 13% at one year[995]. Mortality increases with age. Age-adjusted mortality rates have been reported as: • 50% higher in African-American populations compared with white populations. • Mortality in white populations 50% higher than in other racial groups [996]. Long-term mortality may remain elevated for up to 30 years, largely due to underlying comorbidities rather than recurrent PE or chronic thromboembolic pulmonary hypertension. A large database analysis (>128,000 patients)

[995] Alotaibi GS, Wu C, Senthilselvan A, McMurtry MS. Secular Trends in Incidence and Mortality of Acute Venous Thromboembolism: The AB-VTE Population-Based Study. Am J Med. 2016 Aug;129(8):879.e19-25. Epub 2016 Feb 27.
[996] Horlander KT, Mannino DM, Leeper KV. Pulmonary embolism mortality in the United States, 1979-1998: an analysis using multiple-cause mortality data. Arch Intern Med. 2003;163(14):1711.

reported a three-fold increase in 30-year mortality in patients with PE compared with matched controls [997].

Recurrence

Recurrence likelihood is highest in the first two weeks and declines thereafter. Cumulative recurrence while on anticoagulation:

- 2% at two weeks
- 6% at three months
- 8% at six months
- 13% at one year
- 23% at five years
- 30% at ten years[998] [999] [1000].

Recurrence likelihood is reduced with effective anticoagulation but increased in the presence of risk factors such as unprovoked PE or malignancy.

Likelihood of Bleeding on Anticoagulation

Bleeding risk varies with the number and severity of risk factors, including: Age >65 years; age >75 years; previous bleeding; cancer; metastatic cancer; renal or liver failure; thrombocytopenia; previous stroke; diabetes; anaemia; antiplatelet therapy; poor anticoagulant control; comorbidity; reduced functional capacity; recent surgery; frequent falls; alcohol abuse

Absolute likelihood of major bleeding (Hull et al., Kearon et al.)[1001] [1002]:

Risk of bleeding	Low likelihood (0 factors)	Moderate likelihood (1 factor)	High likelihood (≥ 2 factors)
Anticoagulation 0-3 months	1.6%	3.2%	12.8%
Anticoagulation after 0-3 months (per year)	0.8%	1.6%	≥6.5%

Likelihood Category

- **Recurrence of PE**: Low to High, depending on provoking factors and comorbidities.
- **Major bleeding on anticoagulation**: Very Low to High, depending on risk factors.
- Fatal bleeding: Very Low.

Consequences	**Individual:** Acute PE may be life-threatening and requires urgent hospitalisation, which may not be feasible at sea. Recurrent events or major bleeding may cause sudden incapacitation.

[997] Søgaard KK, Schmidt M, Pedersen L, Horváth-PuhóE, Sørensen HT. 30-year mortality after venous thromboembolism: a population-based cohort study. Circulation. 2014;130(10):829.
[998] Kyrle PA, Rosendaal FR, Eichinger S. Risk assessment for recurrent venous thrombosis. Lancet. 2010;376(9757):2032.
[999] Heit JA. Predicting the risk of venous thromboembolism recurrence. Am J Hematol. 2012 May;87 Suppl 1:S63-7. Epub 2012 Feb 24.
[1000] Zhu T, Martinez I, Emmerich J. Venous thromboembolism: risk factors for recurrence. Arterioscler Thromb Vasc Biol. 2009 Mar;29(3):298-310.
[1001] Hull RD, Raskob GE, Rosenbloom D, et al. Heparin for 5 days as compared with 10 days in the initial treatment of proximal venous thrombosis. N Engl J Med 1990; 322:1260.
[1002] Kearon C, Akl EA, Comerota AJ, et al. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012; 141:e419S.

	Crew: May need to take over duties of the affected individual; may be required to assist in medical evacuation, with associated risks. **Ship:** Potential for significant operational disruption, including diversion, MEDEVAC, crew overburdening, and need for replacement and repatriation.
Unmitigated risk	**Individual**: Unacceptable due to the potential for sudden, severe, or fatal events and the need for immediate medical care. **Crew:** Unacceptable due to the risk of sudden incapacitation and the burden placed on other crew members. **Ship:** Unacceptable because acute PE or major bleeding could compromise safety-critical operations and necessitate emergency evacuation.
Mitigation	• Secondary prevention with anticoagulant therapy, with regular monitoring to ensure therapeutic stability. • Avoidance of duties with high risk of injury while anticoagulated. • Restriction to near-coastal waters to ensure rapid access to hospital care. • Consideration of alternative strategies (e.g., inferior vena cava filter) when anticoagulation is contraindicated [Reference needed]. • Management of underlying risk factors and comorbidities. • Regular clinical follow-up to assess recurrence risk and treatment stability.
Mitigated risk	**Individual:** May be acceptable if stable on anticoagulation, with low bleeding risk, and serving in near-coastal waters. Unacceptable for remote voyages or where rapid access to medical care is not available. **Crew:** Usually acceptable if the individual is stable and appropriately restricted. **Ship:** Usually acceptable if mitigation is effective and duties are adjusted to minimise injury risk**.**
Recommendation	A detailed individual assessment is essential, including evaluation of recurrence risk, bleeding risk, and underlying causes. Specialist input may be required in cases of unprovoked PE, malignancy, or uncertainty regarding long-term management. Stability of anticoagulation and access to timely medical care should be key considerations in determining fitness for duty

22.9.9 OTHER HEART DISEASE

I00-99	Other heart disease e.g. cardiomyopathy, pericarditis, heart failure.	T – Until investigated, treated and adequacy of treatment confirmed P – If impairing symptoms or likelihood of impairment from recurrence	Case by case assessment based on specialist reports	Case by case assessment, very low likelihood of recurrence

22.9.9.1 I30-32 PERICARDITIS AND I40-41 MYOCARDITIS - INFLAMMATORY MYOPERICARDIAL SYNDROME (IMPS)

Reviewed 2026-01-13

Significance	The **2025 European Society of Cardiology (ESC) Guidelines for the management of myocarditis and pericarditis** represent a pivotal evolution in the clinical approach to these conditions, introducing the umbrella term **Inflammatory Myopericardial Syndrome (IMPS).** The term IMPS includes a spectrum of inflammatory diseases from isolated myocarditis to isolated pericarditis through a combination of both [1003]. It is mainly used as an umbrella term during initial diagnostic work-up until the final diagnosis is made. Seafaring is a physically demanding occupation, often performed in remote environments with limited access to advanced medical care. Myocarditis and pericarditis can present acutely, with potential for sudden incapacitation due to arrhythmias, heart failure, or cardiac tamponade, in need of urgent or immediate hospital care. They also carry risks of recurrence and chronic complications, which may impair fitness for duty and pose safety risks to both the individual and the vessel.
Possible medical incident(s)	The clinical spectrum of IMPS is broad, ranging from mild, self-limited symptoms to fulminant, life-threatening presentations. For seafarers, the following medical incidents are of particular regulatory concern: • **Acute Myocarditis:** Presents with chest pain, dyspnoea, palpitations, arrhythmias, syncope, or sudden cardiac death (SCD). May mimic acute coronary syndrome (ACS) and can progress rapidly to heart failure or cardiogenic shock. • **Fulminant Myocarditis:** Characterized by acute onset, haemodynamic instability, biventricular failure, and high short-term mortality. Requires urgent intervention, often with mechanical circulatory support (MCS). • **Pericarditis:** Typically presents with pleuritic chest pain, pericardial friction rub, and pericardial effusion. Complications include cardiac tamponade and constrictive pericarditis, both of which can cause sudden incapacitation. • **Arrhythmias:** Atrioventricular block (AVB), ventricular tachycardia (VT), ventricular fibrillation (VF), and sudden cardiac arrest are recognized complications, particularly in myocarditis and overlapping forms. • **Recurrent Pericarditis:** Persistent or relapsing symptoms, risk of progression to constrictive pericarditis or chronic pain syndromes.

[1003] European Society Guidelines for the management of myocarditis and pericarditis

	• **Inflammatory Cardiomyopathy:** Chronic myocardial inflammation leading to dilated cardiomyopathy (DCM), heart failure, and arrhythmogenic substrate. • **Vaccine- or Drug-Induced Myocarditis:** Recognized in the context of immune checkpoint inhibitors and, rarely, after certain vaccinations. • **Myocarditis in Systemic Diseases:** Such as sarcoidosis or autoimmune disorders, which may have atypical presentations and higher recurrence risk. For seafarers, these incidents can result in sudden loss of capability, exercise limitation, risk of recurrence, and the need for urgent medical care at sea, where resources are limited and evacuation may be delayed.
Likelihood	**Incidence and Prevalence** • **Myocarditis:** Incidence estimated at 6.3–8.6 per 100,000/year, with higher rates in young males [1004]. • **Pericarditis:** Incidence ranges from 3–32 per 100,000/year; recurrence occurs in 20–30% after the first episode and up to 50% after the first recurrence [1005]. **Recurrence Rates** • **Myocarditis:** Overall recurrence ~10%; 1-year recurrence ~5% [1006] [1007] [1008]. • **Pericarditis:** 15–30% after the first episode; up to 50% after the first recurrence [1009]. Recurrence usually occurs within 18 months from the index episode [1010]. **Complications** • **Fulminant Myocarditis:** Represents 3–9% of myocarditis cases; associated with high risk of death or heart transplantation (HT) [1011] . • Progression to **Dilated Cardiomyopathy (DCM)** or **Inflammatory Cardiomyopathy**: Occurs in 6–30% of myocarditis cases [1012] [1013].

[1004] Fu M, Kontogeorgos S, Thunström E, Zverkova Sandström T, Kroon C, Bollano E, Schaufelberger M, Rosengren A. Trends in myocarditis incidence, complications and mortality in Sweden from 2000 to 2014. Sci Rep. 2022 Feb 2;12(1):1810. doi: 10.1038/s41598-022-05951-z. PMID: 35110692; PMCID: PMC8810766.
[1005] Lazarou E, Tsioufis P, Vlachopoulos C, Tsioufis C, Lazaros G. Acute Pericarditis: Update. Curr Cardiol Rep. 2022 Aug;24(8):905-913. doi: 10.1007/s11886-022-01710-8. Epub 2022 May 20. PMID: 35595949; PMCID: PMC9122084.
[1006] Caforio ALP, Pankuweit S, Arbustini E, Basso C, Gimeno-Blanes J, Felix SB, et al. Current state of knowledge on aetiology, diagnosis, management, and therapy of myocarditis: a position statement of the European Society of Cardiology Working Group on Myocardial and Pericardial Diseases. Eur Heart J 2013;34:2636–48, 2648a–48d. https://doi.org/10.1093/eurheartj/eht210
[1007] Baritussio A, Schiavo A, Basso C, Giordani AS, Cheng C-Y, Pontara E, et al. Predictors of relapse, death or heart transplantation in myocarditis before the introduction of immunosuppression: negative prognostic impact of female gender, fulminant onset, lower ejection fraction and serum autoantibodies. Eur J Heart Fail 2022;24:1033–44. https://doi.org/10.1002/ejhf.2496
[1008] Kytö V, Sipilä J, Rautava P. Rate and patient features associated with recurrence of acute myocarditis. Eur J Intern Med 2014;25:946–50. https://doi.org/10.1016/j.ejim. 2014.11.001
[1009] Imazio M, Belli R, Brucato A, Cemin R, Ferrua S, Beqaraj F, et al. Efficacy and safety of colchicine for treatment of multiple recurrences of pericarditis (CORP-2): a multicentre, double-blind, placebo-controlled, randomised trial. Lancet 2014;383:2232–7. https://doi.org/10.1016/S0140-6736(13)62709-9
[1010] Imazio M, Brucato A, Cemin R, Ferrua S, Maggiolini S, Beqaraj F, et al. A randomized trial of colchicine for acute pericarditis. N Engl J Med 2013;369:1522–8. https://doi. org/10.1056/NEJMoa1208536
[1011] Ammirati E, Cipriani M, Moro C, Raineri C, Pini D, Sormani P, et al. Clinical presentation and outcome in a contemporary cohort of patients with acute myocarditis:Multicenter Lombardy Registry. Circulation 2018;138:1088–99. https://doi.org/10. 1161/CIRCULATIONAHA.118.035319
[1012] Uccello G. "Myocarditis and Chronic Inflammatory Cardiomyopathy, from Pathophysiology to Treatment." 2023. Link: https://pmc.ncbi.nlm.nih.gov/articles/PMC10780032/
[1013] Jay W Mason, Myocarditis and dilated cardiomyopathy: An inflammatory link, Cardiovascular Research, Volume 60, Issue 1, October 2003, Pages 5–10, https://doi.org/10.1016/S0008-6363(03)00437-1

	• **Arrhythmias and SCD:** SCD attributed to myocarditis in 1.1–12% of autopsy series [1014]; higher risk in males and those with septal late gadolinium enhancement (LGE) on CMR. • **Mortality:** In-hospital mortality for complicated myocarditis is 8.5%; fulminant cases have up to 24% mortality at 60 days. Pericarditis in-hospital mortality is ~1%, higher in elderly and immunocompromised [1015]. **Occupational risk factors** Recent large-scale screening studies in seafarers indicate a high prevalence of cardiovascular risk factors (hypertension, dysglycaemia, obesity, smoking), which are independently associated with electrocardiographic abnormalities and may increase the risk of adverse outcomes in IMPS [1016] [1017] [1018].
Consequences	**Individual:** Risk of sudden arrhythmia, collapse, or impaired exercise tolerance. **Crew:** Redistribution of duties, medical care involvement, MEDEVAC risk. **Ship:** Operational disruption, diversion, hospitalisation, repatriation.
Unmitigated risk	**Individual:** Unacceptable during acute/subacute illness; acceptable only after full recovery with normal function and no arrhythmia risk. **Crew:** Unacceptable if sudden incapacitation risk persists; acceptable only once recurrence risk is very low. **Ship:** Unacceptable during active disease or residual dysfunction; acceptable only when stable and recurrence risk minimal. **Overall:** Unmitigated risk is unacceptable until fully investigated, treated, and recovery confirmed
Mitigation	• Specialists follow-up with imaging (echo/MRI/CT) • Normalisation of ventricular function • Absence of arrhythmias on ECG/monitoring • Adequate observation period post-illness • Optimised treatment of residual dysfunction • Duty or sailing restrictions if residual impairment exists • Restriction of sailing area for a period of 18 months to facilitate timely access to hospital care in the event of recurrence
Mitigated risk	**Individual:** Acceptable if fully recovered, normal function, no arrhythmias, very low recurrence risk.

[1014] Prasad SK, Akbari T, Bishop MJ, Halliday BP, Leyva-Leon F, Marchlinski F. Late gadolinium enhancement imaging and sudden cardiac death. Eur Heart J. 2025 Sep 22;46(36):3555-3568. doi: 10.1093/eurheartj/ehaf464. PMID: 40664474; PMCID: PMC12450523.
[1015] Ammirati E, Cartella I, Varrenti M et al. Acute myocarditis: 2024 state of the art. European Heart Journal Supplements (2025) 27 (Supplement 1), i56–i60
[1016] Cui C, Zhu H. Epidemiological patterns and occupational predictors of electrocardiographic abnormalities in seafarers: a multicenter health screening analysis. Front Public Health. 2025 Oct 15;13:1602761. doi: 10.3389/fpubh.2025.1602761. PMID: 41170486; PMCID: PMC12568659.
[1017] Sagaro GG, Angeloni U, Marotta C, Nittari G, Rezza G, Silenzi A, Battineni G, Amenta F. The Magnitude of Cardiovascular Disease Risk Factors in Seafarers from 1994 to 2021: A Systematic Review and Meta-Analysis. J Pers Med. 2023 May 20;13(5):861. doi: 10.3390/jpm13050861. PMID: 37241030; PMCID: PMC10224038.
[1018] Jacuś B, Michnowska W, Szafran-Dobrowolska J, Grześk G, Renke M. How do cardiologists see seafarers? International Maritime Health. 2025;76(3):210–215. doi:10.5603/imh.106257.

	Crew: Acceptable once stable and appropriately mitigated. **Ship:** Acceptable when recurrence risk is very low and follow-up is in place.
Recommendation	A specialist assessment is required in all cases to support the risk assessment. Additional investigations may be necessary depending on the suspected aetiology, presence of effusion, or concern for constrictive physiology.

22.9.9.2 I42 - CARDIOMYOPATHY

Reviewed 2026-01-12

Significance	Cardiomyopathies are of major relevance in maritime medical selection because they progressively weaken cardiac function, leading to reduced working capacity, heart failure, arrhythmias, thromboembolic complications, and an increased risk of sudden cardiac death. Many individuals require long-term specialist follow-up, and a substantial proportion will need implantable cardioverter-defibrillators (ICDs) or pacemakers. These conditions may impair the ability to perform routine and emergency duties safely and may pose risks to the individual, the crew, and the safe operation of the vessel.
Possible medical incident(s)	Symptoms of heart failure (e.g., dyspnoea, fatigue, reduced exercise tolerance). Atrial or ventricular arrhythmias. Thromboembolic complications (e.g., stroke, systemic embolism). Sudden cardiac death.
Likelihood	Cardiomyopathies are classified according to anatomy and physiology, with multiple underlying causes. Major categories include: • Dilated cardiomyopathy (DCM). • Hypertrophic cardiomyopathy (HCM). • Restrictive cardiomyopathy (RCM). • Arrhythmogenic right ventricular cardiomyopathy/dysplasia (ARVC/D). • Unclassified cardiomyopathies. ○ They may be primary (predominantly cardiac) or secondary (associated with systemic disease). **Dilated cardiomyopathy (DCM)** DCM may result from numerous conditions[1019], including idiopathic causes (≈50%), myocarditis (9%), ischaemic heart disease (7%), infiltrative disease (5%), peripartum cardiomyopathy (4%), hypertension (4%), and others. Prognosis depends heavily on the underlying cause. Fitness for duty must therefore be based on a detailed individual risk assessment supported by a specialist report addressing: • Aetiology of DCM. • Current symptoms and treatment. • Prognosis and follow-up requirements. • Comorbidities. • Physical capability and ability to perform routine and emergency duties.

[1019] Felker GM, Thompson RE, Hare JM, Hruban RH, Clemetson DE, Howard DL, Baughman KL, Kasper EK. Underlying causes and long-term survival in patients with initially unexplained cardiomyopathy. N Engl J Med. 2000;342(15):1077.

	Hypertrophic cardiomyopathy HCM may involve: • Left ventricular outflow tract (LVOT) obstruction. • Diastolic dysfunction. • Myocardial ischaemia. • Mitral regurgitation. • Systolic dysfunction (end-stage disease with ejection fraction <50%). Symptoms typically relate to heart failure, chest pain, or arrhythmias. For most patients, HCM is not progressive and the clinical course is relatively benign [1020]. Major complications include ventricular arrhythmias leading to sudden death, progressive heart failure, atrial arrhythmias, and embolic stroke [1021]. Mortality: Large cohort studies show annual mortality of approximately 1% or less per year [1022] [1023]. In one referral cohort, 23% survived to at least age 75 [1024]. Causes of death include: • Sudden cardiac death (SCD) (51%). • Heart failure (36%). • Stroke (13%) [1025] [1026]. Risk factors influencing mortality include: Age at diagnosis: Childhood-onset associated with higher mortality [1027]. Symptom severity: Advanced symptoms at diagnosis predict poorer outcomes. LVOT obstruction: Resting gradient >30 mmHg predicts progressive heart failure and stroke[1028]. Coronary artery disease: Ten-year survival varies markedly with CAD severity (46% severe; 71% mild/moderate; 77% none)[1029]. Heart failure progression: NYHA III–IV associated with increased mortality. Atrial fibrillation in HCM: Prevalence 4–6 times higher than general population; incidence ≈2% per year[1030]. It is paroxysmal in approximately two thirds of patients but persists in the remainder.

[1020] Maron BJ, Casey SA, Poliac LC, Gohman TE, Almquist AK, Aeppli DM. Clinical course of hypertrophic cardiomyopathy in a regional United States cohort. JAMA. 1999;281(7):650.
[1021] Gersh BJ, Maron BJ, Bonow RO, Dearani JA, Fifer MA, Link MS, Naidu SS et al. 2011 ACCF/AHA guideline for the diagnosis and treatment of hypertrophic cardiomyopathy: executive summary: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation. 2011;124(24):2761.
[1022] Maron BJ, Casey SA, Poliac LC, Gohman TE, Almquist AK, Aeppli DM. Clinical course of hypertrophic cardiomyopathy in a regional United States cohort. JAMA. 1999;281(7):650.
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[1024] Maron BJ, Casey SA, Hauser RG, Aeppli DM. Clinical course of hypertrophic cardiomyopathy with survival to advanced age. J Am Coll Cardiol. 2003;42(5):882.
[1025] Maron BJ, Olivotto I, Spirito P, Casey SA, Bellone P, Gohman TE, Graham KJ, Burton DA, Cecchi F. Epidemiology of hypertrophic cardiomyopathy-related death: revisited in a large non-referral-based patient population. Circulation. 2000;102(8):858.
[1026] Elliott PM, Gimeno JR, Thaman R, Shah J, Ward D, Dickie S, Tome Esteban MT, McKenna WJ. Historical trends in reported survival rates in patients with hypertrophic cardiomyopathy. Heart. 2006;92(6):785.
[1027] Maron BJ, Casey SA, Poliac LC, Gohman TE, Almquist AK, Aeppli DM. Clinical course of hypertrophic cardiomyopathy in a regional United States cohort. JAMA. 1999;281(7):650
[1028] Maron MS, Olivotto I, Betocchi S, Casey SA, Lesser JR, Losi MA, Cecchi F, Maron BJ. Effect of left ventricular outflow tract obstruction on clinical outcome in hypertrophic cardiomyopathy. N Engl J Med. 2003;348(4):295.
[1029] Sorajja P, Ommen SR, Nishimura RA, Gersh BJ, Berger PB, Tajik AJ. Adverse prognosis of patients with hypertrophic cardiomyopathy who have epicardial coronary artery disease. Circulation. 2003;108(19):2342.
[1030] Olivotto I, Cecchi F, Casey SA, Dolara A, Traverse JH, Maron BJ. Impact of atrial fibrillation on the clinical course of hypertrophic cardiomyopathy. Circulation. 2001;104(21):2517.

Often poorly tolerated; 89% of patients in one series experienced acute symptom worsening[1031].

Ventricular arrythmias in HCM:
Premature ventricular beats in 88% and non-sustained VT in 31% of monitored patients [1032]. Clinical presentation ranges from asymptomatic to syncope or sudden death.

Restrictive cardiomyopathy (RCM)
RCM is characterised by impaired ventricular filling with preserved systolic function in early stages. It is uncommon outside tropical regions but is a major cause of death in areas with high prevalence of endomyocardial fibrosis [1033].

Causes include familial non-infiltrative disease, infiltrative disorders, storage diseases, diabetes, scleroderma, and endomyocardial fibrosis. Patients typically present with pulmonary and systemic congestion [1034] [1035].

Prognosis:
In a Mayo Clinic cohort [1036], (n=94, follow-up 68 months), survival was significantly reduced compared with matched controls:

- 5-year survival: 64% vs 85%.
- 10-year survival: 37% vs 70%.
- Adverse prognostic factors include:
- Male sex.
- Age >70 years.
- Higher NYHA class.
- Left atrial diameter >60 mm.

Adverse risk factors included male gender, age over 70 years, increasing NYHA class and left atrial diameter > 60mm. Survial was not related to the presence of atrial fibrillation or left ventricular systolic dysfunction.

Arrhythmogenic right ventricle cardiomyopathy/dysplasia (ARVC/D
Studies have suggested that 30% of cases are familial and presentation is most common between the ages of 10 and 50 years with a mean of 30 years [1037]. Up to 40% of patients are asymptomatic whilst the remainder show symptoms of [1038]:

- Palpitations (67%)
- Syncope (32%)
- Atypical chest pain (27%)
- Dyspnea (11%)

[1031] Robinson K, Frenneaux MP, Stockins B, Karatasakis G, Poloniecki JD, McKenna WJ. Atrial fibrillation in hypertrophic cardiomyopathy: a longitudinal study. J Am Coll Cardiol. 1990;15(6):1279.
[1032] Adabag AS, Casey SA, Kuskowski MA, Zenovich AG, Maron BJ. Spectrum and prognostic significance of arrhythmias on ambulatory Holter electrocardiogram in hypertrophic cardiomyopathy. J Am Coll Cardiol. 2005;45(5):697.
[1033] Kushwaha SS, Fallon JT, Fuster V. Restrictive cardiomyopathy. N Engl J Med. 1997;336(4):267.
[1034] Benotti JR, Grossman W, Cohn PF. Clinical profile of restrictive cardiomyopathy. Circulation. 1980;61(6):1206.
[1035] Ammash NM, Seward JB, Bailey KR, Edwards WD, Tajik AJ. Clinical profile and outcome of idiopathic restrictive cardiomyopathy. Circulation. 2000;101(21):2490.
[1036] Kubo T, Gimeno JR, Bahl A, Steffensen U, Steffensen M, Osman E, Thaman R, Mogensen J, Elliott PM, Doi Y, McKenna WJ. Prevalence, clinical significance, and genetic basis of hypertrophic cardiomyopathy with restrictive phenotype. J Am Coll Cardiol. 2007;49(25):2419.
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[1038] Hulot JS, Jouven X, Empana JP, Frank R, Fontaine G. Natural history and risk stratification of arrhythmogenic right ventricular dysplasia/cardiomyopathy. Circulation. 2004;110(14):1879.

	• RV failure (6%) Ventricular arrhythmias are common and correlate with disease severity: • Severe disease: 100%. • Moderate: 82%. • Mild: 23%. In asymptomatic individuals diagnosed on screening: • 9.6% developed structural disease. • 50% developed symptomatic ventricular arrhythmias [1039]. Higher-risk groups include those with: • Syncope. • Previous cardiac arrest or haemodynamically significant VT. • Left ventricular involvement[1040] [1041]: Likelihood Category (Overall) • Heart failure progression: Low to High depending on subtype and severity. • Arrhythmias: Moderate to High in HCM and ARVC/D; Low to Moderate in DCM and RCM. • Sudden cardiac death: Low to Moderate overall; higher in HCM and ARVC/D. • Thromboembolism: Low to Moderate depending on atrial arrhythmias and ventricular function.
Consequences	**Individual:** Reduced working capacity; risk of sudden incapacitation due to arrhythmias or thromboembolic events. **Crew:** Need to assume duties of the affected individual; involvement in medical care; risks associated with MEDEVAC. **Ship:** Crew overburdening; diversion; medical evacuation; hospitalisation; repatriation and replacement.
Unmitigated risk	Unmitigated risk is generally unacceptable, given the potential for sudden deterioration, arrhythmias, heart failure, and thromboembolic events, all of which may compromise safety-critical duties and require urgent medical intervention.
Mitigation	• Regular specialist cardiology follow-up. • Optimisation of medical therapy for heart failure, arrhythmias, and thromboembolic risk.

[1039] Nava A, Bauce B, Basso C, Muriago M, Rampazzo A, Villanova C, Daliento L, Buja G, Corrado D, Danieli GA, Thiene G. Clinical profile and long-term follow-up of 37 families with arrhythmogenic right ventricular cardiomyopathy. J Am Coll Cardiol. 2000;36(7):2226.

[1040] Corrado D, Leoni L, Link MS, Della Bella P, Gaita F, Curnis A, Salerno JU, Igidbashian D, Raviele A, Disertori M, Zanotto G, Verlato R, Vergara G, Delise P, Turrini P, Basso C, Naccarella F, Maddalena F, Estes NA 3rd, Buja G, Thiene G. Implantable cardioverter-defibrillator therapy for prevention of sudden death in patients with arrhythmogenic right ventricular cardiomyopathy/dysplasia. Circulation. 2003;108(25):3084.

[1041] Corrado D, Calkins H, Link MS, Leoni L, Favale S, Bevilacqua M, Basso C, Ward D, Boriani G, Ricci R, Piccini JP, Dalal D, Santini M, Buja G, Iliceto S, Estes NA 3rd, Wichter T, McKenna WJ, Thiene G, Marcus FI. Prophylactic implantable defibrillator in patients with arrhythmogenic right ventricular cardiomyopathy/dysplasia and no prior ventricular fibrillation or sustained ventricular tachycardia. Circulation. 2010;122(12):1144.

	• ICD or pacemaker implantation were indicated. • Restrictions on duties involving high physical demand or safety-critical tasks. • Limitation to near-coastal waters where rapid access to medical care is available. • Avoidance of tasks where sudden incapacitation poses unacceptable risk. Monitoring of comorbidities and functional capacity.
Mitigated risk	**Individual:** Acceptable in mild, stable cases with good functional capacity; unacceptable in moderate to severe disease or where risk of sudden incapacitation remains high. **Crew:** Usually acceptable if the individual is stable and appropriately restricted. **Ship:** Usually acceptable if mitigation is effective; unacceptable where risk of sudden deterioration remains significant
Recommendation	A detailed specialist assessment must form the basis of an individualised risk assessment for any person with a history of cardiomyopathy. This should include: • Current symptoms and functional capacity. • Exercise tolerance. • Treatment and follow-up requirements. • Prognosis. • Formal risk stratification for sudden cardiac death. Comorbidities, physical capability, and the individual's ability to perform routine and emergency duties must also be considered.

22.9.9.3 I50 - HEART FAILURE

Reviewed 2026-01-13

Significance	Heart failure (HF) is a clinical syndrome characterised by impaired cardiac function leading to reduced exercise tolerance, diminished working capacity, and an increased risk of acute cardiovascular events. The underlying cardiac pathology may predispose the individual to sudden deterioration requiring immediate medical intervention. Multiple conditions contribute to the development of HF, and their impact varies considerably. In a cohort study of more than 13,000 individuals followed over 19 years, the following risk factors and population-attributable risks (PAR) for HF were identified [1042]: • Coronary heart disease – relative risk 8.1; PAR 62% • Cigarette smoking – relative risk 1.6, PAR 17% • Hypertension – relative risk 1.4, PAR 10% • Obesity – relative risk 1.3, PAR 8% percent • Diabetes – relative risk 1.9, PAR 3% • Valvular heart disease – relative risk 1.5, PAR 2%

[1042] He J, Ogden LG, Bazzano LA, Vupputuri S, Loria C, Whelton PK. Risk factors for congestive heart failure in US men and women: NHANES I epidemiologic follow-up study. Arch Intern Med. 2001;161(7):996.

	These comorbidities must be considered when assessing a seafarer's fitness for duty, as they influence both the likelihood of HF progression and the risk of acute decompensation.
Possible medical incident(s)	Assessment of physical capability must be undertaken with caution in all cases, with reference to Appendix C of the Health Regulations. The focus should be on functional capacity and the ability to perform safety-critical tasks. **Maximal exercise testing is absolutely contraindicated in the presence of active cardiovascular dysfunction, including:** • Acute myocardial infarction (within 2 days) • Ongoing unstable angina • Uncontrolled cardiac arrhythmia with haemodynamic compromise • Active endocarditis • Symptomatic severe aortic stenosis • Decompensated heart failure • Acute pulmonary embolism, pulmonary infarction, or deep vein thrombosis • Acute myocarditis or pericarditis • Acute aortic dissection • Physical disability precluding safe testing **Relative contraindications include:** • Known obstructive left main coronary artery stenosis • Moderate to severe aortic stenosis with uncertain symptom correlation • Tachyarrhythmias with uncontrolled ventricular rates • Acquired advanced or complete heart block • Hypertrophic obstructive cardiomyopathy with severe resting gradient • Recent stroke or transient ischaemic attack • Mental impairment limiting cooperation • Resting blood pressure >200/110 mmHg • Uncorrected medical conditions (e.g. significant anaemia, electrolyte imbalance, hyperthyroidism)
Likelihood	The New York Heart Association (NYHA) functional classification is commonly used to assess the severity of HF: • Class I: No limitation during ordinary activity • Class II: Slight limitation; symptoms with moderate exertion • Class III: Marked limitation; symptoms with minimal exertion • Class IV: Symptoms at rest; inability to perform any physical activity Prospective studies of ACE inhibitor therapy demonstrate a strong correlation between NYHA class and mortality [1043] [1044] [1045] [1046].

[1043] Cohn JN, Archibald DG, Francis GS, et al. Veterans Administration Cooperative Study on Vasodilator Therapy of Heart Failure: influence of prerandomization variables on the reduction of mortality by treatment with hydralazine and isosorbide dinitrate. Circulation 1987; 75:IV49.
[1044] SOLVD Investigators, Yusuf S, Pitt B, et al. Effect of enalapril on mortality and the development of heart failure in asymptomatic patients with reduced left ventricular ejection fractions. N Engl J Med 1992; 327:685.
[1045] SOLVD Investigators, Yusuf S, Pitt B, et al. Effect of enalapril on survival in patients with reduced left ventricular ejection fractions and congestive heart failure. N Engl J Med 1991; 325:293.
[1046] CONSENSUS Trial Study Group. Effects of enalapril on mortality in severe congestive heart failure. Results of the Cooperative North Scandinavian Enalapril Survival Study (CONSENSUS). N Engl J Med 1987; 316:1429.

	NYHA Class I: 1-year mortality 5%; 4-year mortality 19% [1047]. **NYHA Class II–III:** 1-year mortality 15%; 4-year mortality 40% [1048]. **NYHA Class IV:** 6-month mortality 44%; 12-month mortality 64% in one large trial [1049]. Clinically evident HF due to systolic dysfunction typically appears when the left ventricular ejection fraction (LVEF) falls below 35–40%. However, symptoms correlate poorly with LVEF: some individuals remain asymptomatic with LVEF <20%, while others are severely symptomatic with LVEF >30% [1050]. Exercise testing may help quantify functional limitation, but reliance on a single predictor is insufficient for estimating individual prognosis. Overall, the likelihood of acute deterioration or mortality varies widely depending on functional class, underlying pathology, comorbidities, and treatment adequacy.
Consequences	**Individual:** Reduced capacity to perform job tasks, risk of acute decompensation, arrhythmia, ischaemic events, or worsening HF. **Crew:** Redistribution of duties, increased workload, involvement in medical care, and risks associated with medical evacuation (MEDEVAC). **Ship:** Operational disruption, diversion, MEDEVAC, hospitalisation, repatriation, and crew replacement.
Unmitigated risk	**Individual:** Ranges from acceptable (NYHA Class I, stable, well-treated) to unacceptable (NYHA Class III–IV, unstable symptoms, or high risk of acute deterioration). **Crew:** Unacceptable if the individual is at risk of sudden incapacitation or requires frequent medical intervention. **Ship:** Unacceptable where the likelihood of acute decompensation could necessitate diversion or MEDEVAC. **Overall,** the unmitigated risk is unacceptable unless the condition is stable, well-controlled, and associated with a low likelihood of acute deterioration.
Mitigation	Mitigating measures depend on the underlying cause, functional capacity, and response to treatment. These may include: • Optimised medical therapy and documented specialist follow-up • Demonstrated clinical stability over an appropriate observation period

[1047] SOLVD Investigators, Yusuf S, Pitt B, et al. Effect of enalapril on mortality and the development of heart failure in asymptomatic patients with reduced left ventricular ejection fractions. N Engl J Med 1992; 327:685.
[1048] SOLVD Investigators, Yusuf S, Pitt B, et al. Effect of enalapril on survival in patients with reduced left ventricular ejection fractions and congestive heart failure. N Engl J Med 1991; 325:293.
[1049] CONSENSUS Trial Study Group. Effects of enalapril on mortality in severe congestive heart failure. Results of the Cooperative North Scandinavian Enalapril Survival Study (CONSENSUS). N Engl J Med 1987; 316:1429.
[1050] Mele D, et al. "Left ventricular ejection fraction and heart failure: an ambiguous relationship." Eur J Heart Fail. 2018.

	• Restrictions on position or duties where physical exertion or emergency responsibilities may exceed capacity • Restrictions on sailing area if access to medical care is a concern
Mitigated risk	**Individual:** May be acceptable if the seafarer is clinically stable, adequately treated, and demonstrates sufficient working capacity. **Crew:** Usually acceptable once the condition is stable and appropriately mitigated. **Ship:** Acceptable when the risk of acute deterioration is low and the seafarer's functional capacity is adequate.
Recommendation	A specialist cardiovascular assessment is required in all cases. Additional investigations may include echocardiography, functional capacity testing (where safe), and evaluation of underlying conditions.

22.9.9.4 I71.1-2 - THORACIC AORTIC ANEURYSM (TAA)

Reviewed 2026-01-13

Significance	Thoracic aortic aneurysm (TAA) is characterised by progressive dilation of the thoracic aorta, with a natural history of gradual enlargement and an increasing risk of acute aortic dissection or rupture as the diameter expands. Most TAAs are degenerative and associated with traditional atherosclerotic risk factors such as smoking, hypercholesterolaemia, and hypertension [1051] . Hypertension is present in more than 60% of patients with TAA [1052]. Although diabetes mellitus is associated with atherosclerosis, it is negatively correlated with TAA, similar to abdominal aortic aneurysm [1053]. Up to 20% of patients have a family history of aneurysmal disease independent of known genetic syndromes [1054]. Additional risk factors include: • Aortitis • Infection • Inflammatory disorders (e.g. giant cell arteritis, Takayasu arteritis, rheumatoid arthritis, ankylosing spondylitis) • Genetic predisposition (familial, Marfan syndrome, Loeys–Dietz syndrome, Ehlers–Danlos syndrome) • Congenital conditions (e.g. bicuspid aortic valve) Because acute dissection is often catastrophic and may lead to sudden death, TAA represents a potentially serious risk to the individual, the crew, and the safe operation of the vessel.

[1051] Reed D, Reed C, Stemmermann G, Hayashi T. Are aortic aneurysms caused by atherosclerosis? Circulation. 1992;85(1):205.
[1052] Bickerstaff LK, Pairolero PC, Hollier LH, Melton LJ, Van Peenen HJ, Cherry KJ, Joyce JW, Lie JT. Thoracic aortic aneurysms: a population-based study. Surgery. 1982;92(6):1103.

[1053] Prakash SK, Pedroza C, Khalil YA, Milewicz DM. Diabetes and reduced risk for thoracic aortic aneurysms and dissections: a nationwide case-control study. J Am Heart Assoc. 2012 Apr;1(2) Epub 2012 Apr 24.
[1054] Coady MA, Davies RR, Roberts M, Goldstein LJ, Rogalski MJ, Rizzo JA, Hammond GL, Kopf GS, Elefteriades JA. Familial patterns of thoracic aortic aneurysms. Arch Surg. 1999;134(4):361.

Possible medical incident(s)	• Acute aortic dissection • Aortic rupture • Sudden cardiovascular collapse and risk of sudden death
Likelihood	The rate of aneurysm expansion varies between 0.1 and 1.0 cm per year, depending on aetiology, baseline diameter, and anatomical location within the thoracic aorta [1055] [1056] [1057]. The risk of rupture or dissection increases with aneurysm size: • Annual rupture risk <2% for TAAs measuring 4.0–4.9 cm and • annual rupture risk ≈7% for TAAs >6.0 cm [1058]. In a study of 370 patients, the median aortic diameter at rupture was: • 5.9 cm for ascending aneurysms and • 7.2 cm for descending aneurysms[1059]. As the aorta approaches 6 cm, its distensibility decreases markedly, and the vessel loses much of its intrinsic elasticity. At a systolic blood pressure of 200 mmHg, wall stress may reach or exceed the tensile strength of aortic tissue [1060]. cross several series, aneurysm rupture occurred in 32–68% of medically treated patients and accounted for 32–47% of deaths [1061] [1062] [1063]. Reported survival rates were: • 65% at 1 year • 36% at 3 years • 20% at 5 years. Concomitant cardiovascular disease is the second most common cause of death in these patients. Overall, the likelihood of acute dissection or rupture is strongly dependent on aneurysm diameter, rate of expansion, underlying aetiology, and blood-pressure control.
Consequences	**Individual:** Acute aortic dissection or rupture is life-threatening and requires immediate emergency intervention. Sudden collapse may occur without warning. **Crew:** Need to assume the duties of the affected seafarer, involvement in emergency care, and exposure to risks associated with urgent MEDEVAC.

[1055] Kuzmik GA, Sang AX, Elefteriades JA. Natural history of thoracic aortic aneurysms. J Vasc Surg. 2012 Aug;56(2):565-71.
[1056] Griepp RB, Ergin MA, Galla JD, Lansman SL, McCullough JN, Nguyen KH, Klein JJ, Spielvogel D. Natural history of descending thoracic and thoracoabdominal aneurysms. Ann Thorac Surg. 1999 Jun;67(6):1927-30; discussion 1953-8.
[1057] Hansen PA, Richards JM, Tambyraja AL, Khan LR, Chalmers RT. Natural history of thoraco-abdominal aneurysm in high-risk patients. Eur J Vasc Endovasc Surg. 2010 Mar;39(3):266-70. Epub 2010 Jan 13.
[1058] Davies RR, Goldstein LJ, Coady MA, Tittle SL, Rizzo JA, Kopf GS, Elefteriades JA. Yearly rupture or dissection rates for thoracic aortic aneurysms: simple prediction based on size. Ann Thorac Surg. 2002;73(1):17.
[1059] Coady MA, Rizzo JA, Hammond GL, Kopf GS, Elefteriades JA. Surgical intervention criteria for thoracic aortic aneurysms: a study of growth rates and complications. Ann Thorac Surg. 1999;67(6):1922.
[1060] Koullias G, Modak R, Tranquilli M, Korkolis DP, Barash P, Elefteriades JA. Mechanical deterioration underlies malignant behavior of aneurysmal human ascending aorta. J Thorac Cardiovasc Surg. 2005 Sep;130(3):677-83.
[1061] Bickerstaff LK, Pairolero PC, Hollier LH, Melton LJ, Van Peenen HJ, Cherry KJ, Joyce JW, Lie JT. Thoracic aortic aneurysms: a population-based study. Surgery. 1982;92(6):1103.
[1062] Pressler V, McNamara JJ. Thoracic aortic aneurysm: natural history and treatment. J Thorac Cardiovasc Surg. 1980;79(4):489.
[1063] Crawford ES, DeNatale RW. Thoracoabdominal aortic aneurysm: observations regarding the natural course of the disease. J Vasc Surg. 1986;3(4):578.

	Ship: Operational disruption, diversion, urgent MEDEVAC, hospitalisation, repatriation, and the need for crew replacement.
Unmitigated risk	**Individual:** Acceptable only when the aneurysm diameter is within a range associated with a very low likelihood of dissection and the individual is under appropriate specialist follow-up. Unacceptable when the aneurysm is enlarging, approaching surgical thresholds, or requires close or frequent monitoring. **Crew:** Acceptable only if the individual's risk is very low and the condition is stable. **Ship:** Unacceptable if the risk of acute dissection is more than very low, or if the individual requires close surveillance or imminent surgical intervention.
Mitigation	Mitigating measures may include: • Regular specialists follow-up with imaging at intervals appropriate to aneurysm size and growth rate • Optimal management of hypertension and other modifiable risk factors • Surgical repair when indicated • Restrictions on duties or sailing area where access to emergency medical care is limited
Mitigated risk	**Individual:** May be acceptable if the aneurysm is small, stable, and associated with a very low likelihood of dissection, with appropriate specialist follow-up. **Crew:** Usually acceptable when the condition is stable and adequately mitigated. **Ship:** Acceptable when the risk of acute dissection is very low and the seafarer is under appropriate surveillance.
Recommendation	A detailed individual risk assessment is essential. This should include, but not be limited to aneurysm size, rate of progression, likelihood of surgical intervention, risk of rupture or dissection, follow-up requirements, comorbid cardiovascular disease, and physical capability. A specialist report is required in all cases. A restricted or time-limited certificate may be appropriate if the individual is considered fit for service under defined conditions.

22.9.9.5 I71.3-4 - ABDOMINAL AORTIC ANEURYSM (AAA)

Reviewed 2026-01-14

Significance	Most patients with AAA are asymptomatic and are identified incidentally through abdominal imaging, screening programmes, or detection of a pulsatile abdominal mass [1064]. When symptoms occur, they typically include abdominal, back, or flank pain. Thromboembolism may also occur, causing limb ischaemia. Symptomatic aneurysms carry a substantially increased risk of rupture, which is associated with high mortality. An aneurysm is defined as a segmental, full-thickness dilation of a blood vessel ≥50% above its normal diameter [1065] [1066]. The average infrarenal aortic diameter is approximately 2.0 cm, with an upper limit of normal <3.0 cm. An infrarenal aorta ≥3.0 cm is therefore considered aneurysmal [1067] [1068] [1069]. • Small <4.0 cm • Medium 4.0-5.0 cm • Large >5.5 cm • Very large ≥6.0 cm
Possible medical incident(s)	• Abdominal, back or flank pain • Thromboembolism with limb ischaemia • Rupture of aneurysm with high mortality
Likelihood	**The following are associated with an increased risk of developing AAA** [1070] [1071] [1072] [1073] [1074] [1075] [1076] [1077]:

[1064] Shreibati JB, Baker LC, Hlatky MA, Mell MW. Impact of the Screening Abdominal Aortic Aneurysms Very Efficiently (SAAAVE) Act on abdominal ultrasonography use among Medicare beneficiaries. Arch Intern Med 2012; 172:1456.
[1065] Johnston KW, Rutherford RB, Tilson MD, et al. Suggested standards for reporting on arterial aneurysms. Subcommittee on Reporting Standards for Arterial Aneurysms, Ad Hoc Committee on Reporting Standards, Society for Vascular Surgery and North American Chapter, International Society for Cardiovascular Surgery. J Vasc Surg 1991; 13:452.
[1066] Chaikof EL, Brewster DC, Dalman RL, et al. The care of patients with an abdominal aortic aneurysm: the Society for Vascular Surgery practice guidelines. J Vasc Surg 2009; 50:S2.
[1067] Johnston KW, Rutherford RB, Tilson MD, et al. Suggested standards for reporting on arterial aneurysms. Subcommittee on Reporting Standards for Arterial Aneurysms, Ad Hoc Committee on Reporting Standards, Society for Vascular Surgery and North American Chapter, International Society for Cardiovascular Surgery. J Vasc Surg 1991; 13:452.
[1068] Wanhainen A. How to define an abdominal aortic aneurysm--influence on epidemiology and clinical practice. Scand J Surg 2008; 97:105.
[1069] Hirsch AT, Haskal ZJ, Hertzer NR, et al. ACC/AHA 2005 Practice Guidelines for the management of patients with peripheral arterial disease (lower extremity, renal, mesenteric, and abdominal aortic): a collaborative report from the American Association for Vascular Surgery/Society for Vascular Surgery, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine and Biology, Society of Interventional Radiology, and the ACC/AHA Task Force on Practice Guidelines (Writing Committee to Develop Guidelines for the Management of Patients With Peripheral Arterial Disease): endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation; National Heart, Lung, and Blood Institute; Society for Vascular Nursing; TransAtlantic Inter-Society Consensus; and Vascular Disease Foundation. Circulation 2006; 113:e463.
[1070] Chaikof EL, Brewster DC, Dalman RL, et al. The care of patients with an abdominal aortic aneurysm: the Society for Vascular Surgery practice guidelines. J Vasc Surg 2009; 50:S2.
[1071] Altobelli E, Rapacchietta L, Profeta VF, Fagnano R. Risk Factors for Abdominal Aortic Aneurysm in Population-Based Studies: A Systematic Review and Meta-Analysis. Int J Environ Res Public Health 2018; 15.
[1072] Singh K, Bønaa KH, Jacobsen BK, et al. Prevalence of and risk factors for abdominal aortic aneurysms in a population-based study : The Tromsø Study. Am J Epidemiol 2001; 154:236.
[1073] Forsdahl SH, Singh K, Solberg S, Jacobsen BK. Risk factors for abdominal aortic aneurysms: a 7-year prospective study: the Tromsø Study, 1994-2001. Circulation 2009; 119:2202.
[1074] Kent KC, Zwolak RM, Egorova NN, et al. Analysis of risk factors for abdominal aortic aneurysm in a cohort of more than 3 million individuals. J Vasc Surg 2010; 52:539.
[1075] Joergensen TM, Houlind K, Green A, Lindholt JS. Abdominal aortic diameter is increased in males with a family history of abdominal aortic aneurysms: results from the Danish VIVA-trial. Eur J Vasc Endovasc Surg 2014; 48:669.
[1076] Norrgård O, Angqvist KA, Fodstad H, et al. Co-existence of abdominal aortic aneurysms and intracranial aneurysms. Acta Neurochir (Wien) 1987; 87:34.
[1077] Kim DH, Van Ginhoven G, Milewicz DM. Familial aggregation of both aortic and cerebral aneurysms: evidence for a common genetic basis in a subset of families. Neurosurgery 2005; 56:655.

	• Smoking • Male sex • Advancing age • Atherosclerosis • Family history of AAA • Other arterial aneurysms (iliac, femoral, popliteal, intracranial) • Connective tissue disorder (Marfan, Ehlers-Danlos, Loeys-Dietz) • Prior history of aortic dissection • Prior history of aortic surgery or instrumentation **The risk of aneurysm rupture is increased with:** • Large initial aneurysm diameter (>5.5 cm) • Current smoking • Elevated blood pressure • Greater aortic expansion rate (>0.5 cm/year) • Female sex • Symptoms Only 20-30% of patients who present to an emergency department with rupture have a known history of AAA [1078] [1079]. Growth rate is more rapid in large aneurysms (≥5.0 cm). The estimated risk of rupture of an AAA with an initial diameter of 4.5 cm is 20.5% over 5 years, whilst an initial diameter of 3.0 cm has a 4.0% less chance of rupture over 5 years [1080].
Consequences	• Sudden incapacitation due to rupture • Haemorrhagic shock and death • Acute limb ischaemia from thromboembolism • Progressive enlargement with increasing rupture risk
Unmitigated risk	• **Small (<4.0 cm):** Low risk of rupture; low risk of sudden incapacitation. • **Medium (4.0–5.0 cm):** Moderate risk of rupture over time; risk increases with smoking and hypertension. • **Large (>5.5 cm) or symptomatic**: High risk of rupture and sudden incapacitation; unacceptable for safety-critical duties. • **Very large (≥6.0 cm):** Very high risk of rupture; imminent threat to life.
Mitigation	• Smoking cessation • Strict blood pressure control • Regular imaging surveillance (intervals according to diameter) • Cardiovascular risk reduction (lipids, diabetes, antiplatelet therapy as clinically indicated) • Elective repair (open or endovascular) when meeting guideline thresholds • Post-repair follow-up imaging to detect endoleak or graft complications

[1078] Akkersdijk GJ, van Bockel JH. Ruptured abdominal aortic aneurysm: initial misdiagnosis and the effect on treatment. Eur J Surg 1998; 164:29.
[1079] Gloviczki P, Pairolero PC, Mucha P Jr, et al. Ruptured abdominal aortic aneurysms: repair should not be denied. J Vasc Surg 1992; 15:851.
[1080] Vardulaki K.A., Prevost T.C., Walker N.M., et al. Growth rates and risk of rupture of abdominal aortic aneurysms. British Journal of Surgery 2003; 85(12):1674-1680. https://doi.org/10.1046/j.1365-2168.1998.00946.x

	• Time limitation of certificate to next follow-up • Restriction of sailing area may be necessary, based on specialist informed advice.
Mitigated risk	**Post-repair with stable imaging and no complications:** Risk of rupture markedly reduced but not eliminated; EVAR (Endovascular Aneurysm Repair) requires lifelong surveillance. **Small or medium aneurysms under appropriate surveillance and risk-factor control:** Acceptable risk if asymptomatic and stable. **Large or symptomatic aneurysms:** Risk remains unacceptable until successfully repaired and stabilised.
Recommendation	**Unrepaired AAA <4.0 cm:** Fit if asymptomatic, haemodynamically stable, and under documented surveillance. **Unrepaired AAA 4.0–5.0 cm:** Usually fit with limitations; requires specialist assessment, documented stability, and surveillance at guideline intervals. **Unrepaired AAA >5.5 cm or symptomatic at any size:** Unfit until repaired and stabilised. **Post-repair (open or EVAR):** Fit after specialist clearance, stable postoperative imaging, and absence of complications (e.g., endoleak, graft migration). Ongoing surveillance must be documented. **Any AAA with rapid expansion (>0.5 cm/year):** Unfit until evaluated and treated.

22.10 J 00-99 RESPIRATORY SYSTEM

22.10.1 NOSE, THROAT AND SINUS CONDITIONS

J 02-04 J 30-39	Nose, throat and sinus conditions impairing for individual. May recur. Transmission of infection to food/other crew in some	T – Until resolved P – If impairing and recurrent.	Case-by-case assessment	When treatment complete if no factors predisposing to recurrence

22.10.1.1 J00 - ACUTE INFECTIOUS RHINITIS

Reviewed 2026-01-14

Significance	Acute rhinitis is a common, acute, self-limiting inflammation that may involve the nose, sinuses, throat, and larynx. Symptoms vary with the individual and the pathogen but usually resolve within two weeks.
Possible medical incident(s)	• Otitis media • Acute rhinosinusitis • Exacerbation of asthma or chronic obstructive airway disease • Community-acquired pneumonia (rare) • Ear or sinus barotrauma during air travel

Likelihood	Complications usually come from secondary bacterial infection.
Consequences	**Individual:** • Temporary impairment due to nasal obstruction, cough, malaise, fever, or sleep disturbance • Reduced concentration and performance • Risk of complications (sinusitis, otitis media, asthma/COPD exacerbation) **Crew:** • Transmission of viral infection to other crew members • Reduced team performance if multiple crew become symptomatic • Increased risk of operational errors if symptoms impair alertness **Ship:** • Potential disruption of operations if several crew are affected simultaneously • Increased workload on unaffected crew • Possible impact on hygiene-critical duties (e.g., food handling)
Mitigation	• Symptomatic treatment • Temporary removal from food-handling duties if significant nasal discharge or cough • Avoidance of flying until symptoms improve to reduce risk of barotrauma • Monitoring individuals with underlying respiratory disease • Reinforcement of hygiene measures to reduce transmission (hand hygiene, cough etiquette)
Risk assessment	**Individual:** • Low risk if symptoms are mild, self-limiting, and without complications • Moderate risk if symptoms impair safe performance of duties • High risk if complications occur or if underlying respiratory disease is destabilised **Crew:** • Low to moderate risk of transmission depending on living/working conditions • Higher risk in enclosed or shared spaces **Ship:** • Low risk for isolated mild cases • Moderate risk if multiple crew become symptomatic, affecting operational capacity.
Recommendation	Any person with a history of complications due to acute infectious rhinitis should be considered temporarily unfit and should not join a ship until symptoms have resolved. Individuals with previous otitis media, sinusitis, pneumonia, asthma, or chronic obstructive airway disease may require closer monitoring. If air travel is required to join a ship, the person must also be fit to fly.

22.10.1.2 J30 - ALLERGIC RHINITIS

Reviewed 2026-01-14

Significance	Allergic rhinitis is a common inflammatory condition of the nasal mucosa, characterised by nasal pruritus, sneezing, rhinorrhoea, and nasal congestion. Associated symptoms may include palate, throat, ear, and eye itching, as well as eye redness, puffiness, and watery discharge. Complications such as sleep-disturbed breathing, fatigue, and generalised malaise are common, although patients may not always report them [1081] [1082] [1083] [1084]. In adults, allergic rhinitis is associated with anxiety, depression, reduced academic and work performance (often lower than in patients with asthma), impaired sexual performance, and reduced quality-of-life scores [1085] [1086] [1087] [1088] [1089] [1090].
Possible medical incident(s)	• Sleep-disturbed breathing • Fatigue and general malaise • Anxiety and depression • Reduced cognitive performance • Reduced physical performance
Likelihood	**Likelihood of occurrence require possibility of exposure to allergen. Pollen-allergy is usually not a problem at sea.** **Pattern** • **Intermittent:** Symptoms present <4 days per week or <4 weeks • **Persistent:** Symptoms present >4 days per week and >4 weeks; consider possible occupational rhinitis **Severity** • **Mild:** None of the criteria for moderate–severe disease is present • **Moderate–severe:** One or more of the following: • Sleep disturbance • Impairment of school or work performance • Impairment of daily activities, leisure, or sport • Troublesome symptoms
Consequences	**Individual:** Reduced performance due to nasal obstruction, fatigue, sleep disturbance, or cognitive impairment. Subjectively troublesome symptoms affecting wellbeing and concentration.

[1081] Georgalas C. The role of the nose in snoring and obstructive sleep apnoea: an update. Eur Arch Otorhinolaryngol 2011; 268:1365.
[1082] Koinis-Mitchell D, Craig T, Esteban CA, Klein RB. Sleep and allergic disease: a summary of the literature and future directions for research. J Allergy Clin Immunol 2012; 130:1275.
[1083] Meltzer EO, Nathan R, Derebery J, et al. Sleep, quality of life, and productivity impact of nasal symptoms in the United States: findings from the Burden of Rhinitis in America survey. Allergy Asthma Proc 2009; 30:244.
[1084] Blaiss MS. Pediatric allergic rhinitis: physical and mental complications. Allergy Asthma Proc 2008; 29:1.
[1085] Romano-Zelekha O, Graif Y, Garty BZ, et al. Trends in the prevalence of asthma symptoms and allergic diseases in Israeli adolescents: results from a national survey 2003 and comparison with 1997. J Asthma 2007; 44:365.
[1086] Meltzer EO, Nathan R, Derebery J, et al. Sleep, quality of life, and productivity impact of nasal symptoms in the United States: findings from the Burden of Rhinitis in America survey. Allergy Asthma Proc 2009; 30:244.
[1087] Léger D, Annesi-Maesano I, Carat F, et al. Allergic rhinitis and its consequences on quality of sleep: An unexplored area. Arch Intern Med 2006; 166:1744.
[1088] Postolache TT, Lapidus M, Sander ER, et al. Changes in allergy symptoms and depression scores are positively correlated in patients with recurrent mood disorders exposed to seasonal peaks in aeroallergens. ScientificWorldJournal 2007; 7:1968.
[1089] Benninger MS, Benninger RM. The impact of allergic rhinitis on sexual activity, sleep, and fatigue. Allergy Asthma Proc 2009; 30:358.
[1090] Meltzer EO, Blaiss MS, Naclerio RM, et al. Burden of allergic rhinitis: allergies in America, Latin America, and Asia-Pacific adult surveys. Allergy Asthma Proc 2012; 33 Suppl 1:S113.

	Crew: Minor impact; possible reduced team efficiency if symptoms impair alertness or sleep **Ship:** Minor operational impact; symptoms rarely cause sudden incapacitation
Mitigation	• Symptomatic treatment (antihistamines, intranasal corticosteroids, saline irrigation) • Allergen avoidance where feasible • Consideration of subcutaneous immunotherapy/desensitisation in selected cases
Risk assessment	**Individual:** Usually acceptable; symptoms may impair comfort or performance but rarely pose safety-critical risk. **Crew:** Usually acceptable; minimal risk of transmission or operational disruption. **Ship:** Usually acceptable; no significant risk to ship operations.
Recommendation	Individuals with moderate–severe symptoms should demonstrate adequate symptom control with treatment before joining a ship. Persistent or occupational rhinitis may require specialist assessment.

22.10.1.3 J01 - RHINOSINUSITIS

Reviewed 2026-01-14

Significance	Reduced performance, subjectively troublesome symptoms, and the risk of complications are the main concerns in medical selection. Acute rhinosinusitis may impair concentration, sleep, and physical comfort, and complicated cases may require urgent medical intervention.
Possible medical incident(s)	**Complications:** • Preseptal (periorbital) cellulitis • Orbital cellulitis • Mastoiditis • Subperiosteal abscess • Osteomyelitis of sinus bones • Meningitis • Intracranial abscess Septic cavernous sinus thrombosis
Likelihood	• Acute viral rhinosinusitis (ARS) is complicated by bacterial infection in 0.5–13% of cases; symptoms may last up to four weeks [1091]. • Acute bacterial rhinosinusitis (ABRS) occurs in 0.5–2.0% of ARS episodes [1092]. • In a study of 616 patients, orbital complications occurred in 36 individuals (5.8%): • 26 children (72.2%)

[1091] Gwaltney JM Jr. Acute community-acquired sinusitis. Clin Infec Dis; 1996 Dec;23(6):1209-23; quiz 1224-5.
[1092] Fokkens W, Lund V, Mullol J, European Position Paper on Rhinosinusitis and Nasal Polyps Group. EP3OS 2007: European position paper on rhinosinusitis and nasal polyps 2007. A summary for otorhinolaryngologists. Rhinology 2007; 45:97.

	• 10 adults (27.8%) [1093]
Consequences	**Individual:** Reduced performance, troublesome symptoms, impaired sleep, and—if complicated—risk of serious illness requiring hospitalisation. **Crew:** Need to care for an ill seafarer, redistribution of duties, and risks associated with potential medical evacuation. **Ship:** Operational disruption due to reduced manpower, possible MEDEVAC, hospitalisation, and need for replacement crew.
Unmitigated risk	**Individual:** Unacceptable due to impaired performance and risk of deterioration or complications. **Crew:** Moderate; may require support and redistribution of duties. **Ship:** Unacceptable in acute or complicated cases due to risk of MEDEVAC and operational disruption.
Mitigation	• Complete treatment on shore before going to sea. • Ensure resolution of acute symptoms and absence of complications. • For recurrent or chronic rhinosinusitis, ensure appropriate evaluation and management before certification
Mitigated risk	**Individual:** Not acceptable in acute or recurrent cases until fully treated and stable. **Crew:** Acceptable once the individual is symptom-free and no longer requires medical follow-up. **Ship:** Not acceptable in acute or chronic cases until treatment is complete and stability is documented.

22.10.1.4 J03 - TONSILLITIS

Reviewed 2026-01-14

Significance	Tonsillitis is usually a self-limiting condition resolving within approximately seven days. However, there is a medium risk of complications such as acute sinusitis, acute otitis media, or scarlet fever, and some individuals may develop recurrent tonsillitis. Symptoms may impair performance, concentration, and sleep, and complications may require urgent medical care.
Possible medical incident(s)	Group A beta-haemolytic streptococci (GAS), accounting for 5–10% of adult cases [1094].

[1093] Al-Madani MV, Khatatbeh AE, Rawashdeh RZ, Al-Khtoum NF, Shawagfeh NR. The prevalence of orbital complications among children and adults with acute rhinosinusitis. Braz J Otorhinolaryngol. 2013 Nov-Dec;79(6):716-9. doi: 10.5935/1808-8694.20130131. PMID: 24474483; PMCID: PMC9442403.

[1094] Snow V, Mottur-Pilson C, Cooper RJ, Hoffman JR. Principles of appropriate antibiotic use for acute pharyngitis in adults.Ann Intern Med. 2001;134(6):506.

	Non-suppurative complications: • Acute rheumatic fever • Poststreptococcal reactive arthritis • Scarlet fever • Streptococcal toxic shock syndrome • Acute glomerulonephritis **Suppurative complications:** • Tonsillopharyngeal cellulitis or abscess (peritonsillar abscess/quinsy) • Otitis media • Sinusitis • Skin and soft tissue infections
Likelihood	• Most cases are viral and self-limiting. • **GAS tonsillitis** accounts for a minority of adult cases but carries a higher risk of complications. • **Recurrent tonsillitis** is common in some individuals and may significantly impair function. • **Suppurative complications** such as peritonsillar abscess occur in a small but clinically important proportion of cases. • **Acute rheumatic fever** has declined in both severity and mortality since the beginning of the 20th century [1095] [1096], but remains a problem in the developing countries, and even is on the rise in some developed countries [1097] [1098]. A study of 315 cases of tonsillitis, found that 19% (45 cases) got complications, like tonsillar adeno-phlegmon (19 cases), rheumatic complications with cardiomyopathy (15 cases), cervical cellulitis (4 cases), adeno-phlegmon (3 cases), parapharyngeal abscess (2 cases) [1099].
Consequences	**Individual:** • Reduced performance due to throat pain, fever, malaise, and sleep disturbance • Difficulty swallowing, reduced oral intake • Risk of serious complications requiring urgent treatment or hospitalization **Crew:** • Need to care for an ill seafarer • Redistribution of duties • Potential need for medical evacuation if complications arise **Ship:** • Operational disruption due to reduced manpower • Possible MEDEVAC and associated risks

[1095] Denny FW Jr. A 45-year perspective on the streptococcus and rheumatic fever: the Edward H. Kass Lecture in infectious disease history. Clin Infect Dis 1994; 19:1110.
[1096] Stollerman GH. Changing streptococci and prospects for the global eradication of rheumatic fever. Perspect Biol Med 1997; 40:165.
[1097] Stollerman GH. Rheumatic fever. Lancet 1997; 349:935.
[1098] North DA, Heynes RA, Lennon DR, Neutze J. Analysis of costs of acute rheumatic fever and rheumatic heart disease in Auckland. N Z Med J 1993; 106:400.
[1099] Haidara, A.W., Sidibé, Y., Samaké, D., Coulibaly, A.,Touré, M.K., Coulibaly, B.B., Soumaoro, S., Guindo, B., Diarra, K., Coulibaly, K., Sanogo, B., Kéïta, M. and Mohamed, A.A.(2019) Tonsillitis and Their Complications: Epidemiological, Clinical and Therapeutic Profiles. International Journal of Otolaryngology and Head & Neck Surgery, 8, 98-105.https://doi.org/10.4236/ijohns.2019.83011

	• Need for replacement crew if prolonged illness or complications occur
Unmitigated risk	**Individual:** Unacceptable due to impaired performance and risk of deterioration or complications. **Crew:** Moderate; may require support and redistribution of duties. **Ship:** Unacceptable in acute or complicated cases due to risk of MEDEVAC and operational disruption.
Mitigation	• Complete treatment on shore before joining a ship. • Ensure full resolution of acute symptoms and absence of complications. • For recurrent tonsillitis, ensure appropriate evaluation (including ENT assessment if indicated). • Adequate hydration, analgesia, and antimicrobial therapy when clinically appropriate.
Mitigated risk	**Individual:** Acceptable only once symptoms have resolved and no complications are present. Recurrent cases require stability and specialist evaluation if frequent or severe. **Crew:** Acceptable once the individual is fully recovered and no longer requires medical follow-up. **Ship:** Acceptable only after full recovery; not acceptable in acute, complicated, or recurrent unstable cases.
Recommendation	Unfit during acute tonsillitis and until treatment is complete and symptoms have resolved. Fit once fully recovered and free of complications. Recurrent tonsillitis may require ENT specialist advice, particularly if episodes are frequent, severe, or associated with complications.

22.10.1.5 R04.0 – EPISTAXIS

Reviewed 2026-01-14

Significance	Epistaxis is common and usually benign, but its relevance in maritime medical selection lies in the potential for sudden bleeding episodes that may impair performance, distract from safety-critical duties, or require urgent medical intervention. **Anterior epistaxis** is typically self-limiting and manageable on board. **Posterior epistaxis**, however, may cause significant haemorrhage, airway compromise, or haemodynamic instability, and often requires urgent specialist care. Underlying conditions such as anticoagulation, vascular abnormalities, neoplasms, or bleeding disorders may increase recurrence risk and complicate management at sea. The possibility of sudden incapacitation, need for MEDEVAC, or operational disruption makes this condition of importance to safe ship operation.

Possible medical incident(s)	• Acute anterior or posterior nasal bleeding, • Recurrent bleeding episodes • Significant haemorrhage requiring urgent medical evacuation Bleeding secondary to: • Anticoagulation • Bleeding disorders • Vascular abnormalities (including aneurysm) • Neoplasms • Hypertension • Heart failure • Intranasal antiallergic preparations • Complications of nasal packing, including toxic shock syndrome [Reference] • Airway compromise or aspiration of blood (rare) These incidents may impair concentration, cause acute distress, or necessitate urgent medical intervention, thereby affecting individual safety, crew safety, and ship operations.
Likelihood	Among anticoagulated patients, one study reports an annual epistaxis incidence of 25% [1100] although reversal of therapy was required in only 1.5 per 1000 patient-years [1101]. **Nasal packing for anterior bleeding has a 90–95% success rate** [1102] [1103]. Patients with hereditary haemorrhagic telangiectasia may experience severe, recurrent epistaxis resistant to standard management [1104]. The incidence of **toxic shock syndrome** following postoperative nasal packing is estimated at about 16 per 100,000 packings, whilst incidence in primary nasal packing has not been established but should not be forgotten [1105]. Recurrent posterior bleeds or massive haemorrhage may indicate carotid artery aneurysm or pseudoaneurysm, especially in patients with prior head and neck surgery or trauma [1106]. Epistaxis may be a presenting symptom of nasal neoplasms (e.g., squamous cell carcinoma, adenoid cystic carcinoma, melanoma, inverted papilloma) [1107].

[1100] Lavy J. Epistaxis in anticoagulated patients: educating an at-risk population. Br J Haematol. 1996;95(1):195.
[1101] Nitu IC, Perry DJ, Lee CA. Clinical experience with the use of clotting factor concentrates in oral anticoagulation reversal. Clin Lab Haematol. 1998;20(6):363.
[1102] Corbridge RJ, Djazaeri B, Hellier WP, Hadley J. A prospective randomized controlled trial comparing the use of merocel nasal tampons and BIPP in the control of acute epistaxis. Clin Otolaryngol Allied Sci 1995; 20:305.
[1103] McGlashan JA, Walsh R, Dauod A, et al. A comparative study of calcium sodium alginate (Kaltostat) and bismuth tribromophenate (Xeroform) packing in the management of epistaxis. J Laryngol Otol 1992; 106:1067.
[1104] Shah RK, Dhingra JK, Shapshay SM. Hereditary hemorrhagic telangiectasia: a review of 76 cases. Laryngoscope. 2002;112(5):767.
[1105] Younis RT, Lazar RH. Delayed toxic shock syndrome after functional endonasal sinus surgery. Arch Otolaryngol Head Neck Surg. 1996 Jan;122(1):83-5. doi: 10.1001/archotol.1996.01890130075012. PMID: 8554751.
[1106] Liu JK, Gottfried ON, Amini A, Couldwell WT. Aneurysms of the petrous internal carotid artery: anatomy, origins, and treatment. Neurosurg Focus. 2004;17(5):E13.
[1107] Alvi A, Joyner-Triplett N. Acute epistaxis. How to spot the source and stop the flow. Postgrad Med. 1996;99(5):83.

	Nasopharyngeal cancers are more common in individuals of Chinese or Southeast Asian heritage. Aspirin as a risk factor remains uncertain; other NSAIDs (e.g., ibuprofen) do not appear to increase risk [1108]. The association between **hypertension** and epistaxis is uncertain. Multiple studies have related hypertension to nosebleeds [1109], although studies specifically exploring this relationship have been unable to confirm the association [1110]. **Alcohol** may increase the risk for epistaxis [1111], as may intranasal preparations for seasonal allergies [1112].
Consequences	**Individual:** • Anterior bleeds: Disturbance of daily working function; recurrent episodes may be significantly disruptive. • Posterior bleeds: May require urgent hospitalisation; rarely associated with major blood loss but potentially serious. **Crew:** • Redistribution of duties • Caring for an ill seafarer • Risks associated with potential MEDEVAC **Ship:** • Overburdening of remaining crew • Possible MEDEVAC or diversion • Hospitalisation, repatriation, and need for replacement crew
Unmitigated risk	**Individual:** • Anterior epistaxis: Acceptable in most cases; episodes are usually self-limiting. • Posterior epistaxis: Unacceptable due to risk of significant haemorrhage and need for urgent specialist care. **Crew:** • Anterior: Acceptable; minimal impact unless recurrent. • Posterior: Unacceptable due to potential need for emergency support and MEDEVAC. **Ship:** • Anterior: Acceptable unless recurrent to a degree that disrupts operations. • Posterior: Unacceptable due to risk of diversion, MEDEVAC, and operational instability. **Overall unmitigated risk:** • Anterior epistaxis: Usually acceptable.

[1108] Hart RG, Pearce LA. In vivo antithrombotic effect of aspirin: dose versus nongastrointestinal bleeding. Stroke. 1993;24(1):138.
[1109] Abrich V, Brozek A, Boyle TR, Chyou PH, Yale SH. Risk factors for recurrent spontaneous epistaxis. Mayo Clin Proc. 2014 Dec;89(12):1636-43. Epub 2014 Nov 6.
[1110] Lubianca Neto JF, Fuchs FD, Facco SR, Gus M, Fasolo L, Mafessoni R, Gleissner AL. Is epistaxis evidence of end-organ damage in patients with hypertension? Laryngoscope. 1999;109(7 Pt 1):1111.
[1111] McGarry GW, Gatehouse S, Hinnie J. Relation between alcohol and nose bleeds. BMJ. 1994;309(6955):640.
[1112] Druce HM, Spector SL, Fireman P, Kaiser H, Meltzer EO, Boggs P, Wood CC, Paluch EP. Double-blind study of intranasal ipratropium bromide in nonallergic perennial rhinitis. Ann Allergy. 1992;69(1):53.

	• Posterior epistaxis or recurrent unexplained epistaxis: Unacceptable.
Mitigation	Possible mitigating measures include: • Definitive treatment of underlying cause (e.g., cautery, correction of coagulopathy, treatment of neoplasm). • ENT evaluation for recurrent, posterior, or unexplained epistaxis. • Review and optimisation of anticoagulation therapy where clinically appropriate. • Avoidance of intranasal irritants and alcohol. • Limitation of certificate duration to ensure regular review. • Restriction of sailing area (e.g., avoiding remote operations) where appropriate. • Clear instructions for self-management of minor anterior bleeds. • Ensuring access to basic first-aid materials on board
Mitigated risk	**Individual:** • Anterior epistaxis: Acceptable once underlying causes are treated and recurrence is infrequent. • Posterior epistaxis: Acceptable only after definitive treatment and specialist confirmation of stability. **Crew:** • Acceptable once the individual is stable and recurrence risk is low. **Ship:** • Acceptable only when recurrence is unlikely and no posterior bleeding risk remains. **Overall mitigated risk:** • Acceptable for anterior epistaxis once stable. • Acceptable for posterior epistaxis only after definitive treatment and specialist clearance. • Unacceptable if recurrent, unexplained, or associated with untreated underlying pathology.
Recommendation	Although most nosebleeds are self-limiting, a minority require surgical intervention and may pose significant risks at sea [1113] [1114]. Any individual reporting recurrent epistaxis should undergo thorough assessment to exclude underlying pathology. Posterior epistaxis always requires specialist evaluation before certification. Fit for duty only when the condition is stable, the underlying cause is treated, and the risk of recurrence is low. Cases involving neoplasms, vascular abnormalities, or hereditary haemorrhagic telangiectasia should be considered for specialist advice and.

[1113] Villwock JA, Jones K. Recent trends in epistaxis management in the United States: 2008-2010. JAMA Otolaryngol Head Neck Surg. 2013 Dec;139(12):1279-84.
[1114] Kotecha B, Fowler S, Harkness P, Walmsley J, Brown P, Topham J. Management of epistaxis: a national survey. Ann R Coll Surg Engl. 1996;78(5):444.

22.10.2 OBSTRUCTIVE LUNG DISEASE

J 40-44	Chronic bronchitis and/or emphysema Reduced exercise tolerance and impairing symptoms	T – If acute episode P – If repeated severe recurrences or if general fitness requirements cannot be met or if impairing shortness of breath	R, L – Case-by-case assessment More stringency for distant water duties. Consider fitness for emergencies and ability to meet general requirements for physical fitness (C – Physical capability requirements). Annual review.	Not applicable

22.10.2.1 J40-44 - CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

Reviewed 2026-01-14

Significance	COPD is a progressive respiratory disease characterised by airflow limitation, reduced exercise tolerance, and a risk of acute exacerbations. These exacerbations may require urgent medical treatment, including hospitalisation, and may occur unpredictably. For seafarers, COPD may impair the ability to perform physically demanding tasks, respond effectively in emergencies, or tolerate environmental exposures such as cold, heat, dust, fumes, or exertion. The condition therefore has direct relevance to the safety of the individual, the safety of other crew members, and the safe operation of the ship.
Possible medical incident(s)	• Acute exacerbations requiring medical treatment, sometimes urgently • Respiratory infections (trigger approximately 70% of exacerbations). • Exacerbations due to environmental pollution, pulmonary embolism, or unknown causes (approximately 30%) [1115]. • Sudden reduction in exercise tolerance or breathlessness during safety-critical tasks • Hypoxaemia or respiratory failure in severe disease • Need for emergency evacuation if symptoms cannot be managed on board • Reduced ability to meet physical capability requirements during emergencies
Likelihood	A history of prior exacerbations is the strongest predictor of future exacerbations, regardless of COPD severity [1116].

[1115] Sapey E, Stockley RA. COPD exacerbations . 2: aetiology. Thorax. 2006;61(3):250.
[1116] Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global strategy for the diagnosis, management, and prevention of COPD 2016. December 2015. http://www.goldcopd.org

Staging commonly follows the GOLD criteria, and prognosis is often assessed using CAT or mMRC classifications.

The BODE index (Body mass index, Obstruction, Dyspnoea, Exercise capacity) is a strong predictor of mortality and hospitalisation [1117].

Prognostic indicators include [1118] [1119] [1120] [1121] [1122] [1123] [1124] [1125] [1126] [1127] [1128]:

- Airways responsiveness
- Cigarette smoking
- Low body-mass index (BMI ≤21)
- HIV infection
- Increased airway bacterial load
- Decreased exercise capacity
- Peak oxygen consumption (VO2)
- Elevated C-reactive protein (>3 mg/L)
- Male gender
- CT evidence of emphysema

Survival by post-bronchodilator FEV_1 (% predicted) ≤65 years) [1129] [1130]:

Initial PB FEV_1 Percent predicted	No	At 2 years	At 5 years	At 10 years	At 15 years
<20	9	44	11	11	0
20-29	40	65	30	10	3
30-39	43	83	47	21	7
40-49	26	92	89	39	30
50-59	9	100	89	89	67

[1117] Marin J.M., Carrizo S.J. et al. Prediction of risk of COPD exacerbations by the BODE index. Respiratory Medicine, 2009; 103 (3): 373-378. ISSN 0954-6111. https://doi.org/10.1016/j.rmed.2008.10.004.
[1118] Celli BR, Cote CG, Marin JM, et al. The body-mass index, airflow obstruction, dyspnea, and exercise capacity index in chronic obstructive pulmonary disease. N Engl J Med 2004; 350:1005.
[1119] Heffner JE, Mularski RA, Calverley PM. COPD performance measures: missing opportunities for improving care. Chest 2010; 137:1181.
[1120] Hospers JJ, Postma DS, Rijcken B, et al. Histamine airway hyper-responsiveness and mortality from chronic obstructive pulmonary disease: a cohort study. Lancet 2000; 356:1313.
[1121] Diaz PT, King MA, Pacht ER, et al. Increased susceptibility to pulmonary emphysema among HIV-seropositive smokers. Ann Intern Med 2000; 132:369.
[1122] Wilkinson TM, Patel IS, Wilks M, et al. Airway bacterial load and FEV1 decline in patients with chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2003; 167:1090.
[1123] Berry MJ, Adair NE, Rejeski WJ. Use of peak oxygen consumption in predicting physical function and quality of life in COPD patients. Chest 2006; 129:1516.
[1124] Dahl M, Vestbo J, Lange P, et al. C-reactive protein as a predictor of prognosis in chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2007; 175:250.
[1125] Drummond MB, Blackford AL, Benditt JO, et al. Continuous oxygen use in nonhypoxemic emphysema patients identifies a high-risk subset of patients: retrospective analysis of the National Emphysema Treatment Trial. Chest 2008; 134:497.
[1126] de Torres JP, Cote CG, López MV, et al. Sex differences in mortality in patients with COPD. Eur Respir J 2009; 33:528.
[1127] Kohansal R, Martinez-Camblor P, Agustí A, et al. The natural history of chronic airflow obstruction revisited: an analysis of the Framingham offspring cohort. Am J Respir Crit Care Med 2009; 180:3.
[1128] Haruna A, Muro S, Nakano Y, et al. CT scan findings of emphysema predict mortality in COPD. Chest 2010; 138:635.
[1129] Reference: Traver GA, Cline MG, Burrows B. Predictors of mortality in chronic obstructive pulmonary disease. A 15-year follow-up study. Am Rev Respir Dis 1979; 119:895. 2021 UpToDate
[1130] de Torres JP, Cote CG, López MV, et al. Sex differences in mortality in patients with COPD. Eur Respir J 2009; 33:528.

Survival rates using the **BODE index** is superior to unidimensional prediction of mortality using FEV_1 alone [1131].

The BODE index:

FEV1 % predicted after bronchodialator
- ○≥65% (0 points)
- ○50 to 64% (1 point)
- ○36 to 49% (2 points)
- ○≤35% (3 points)

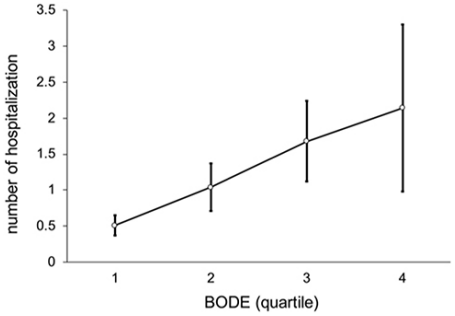
6-minute walk distance
- ○≥350 meters (0 points)
- ○250 to 349 meters (1 point)
- ○150 to 249 meters (2 points)
- ○≤149 meters (3 points)

MMRC dyspnea scale (4 is worst)
- ○MMRC 0: Dyspneic on strenuous exercise (0 points)
- ○MMRC 1: Dyspneic on walking a slight hill (0 points)
- ○MMRC 2: Dyspneic on walking level ground; must stop occasionally due to breathlessness (1 point)
- ○MMRC 3: Must stop for breathlessness after walking 100 yards [91 meters] or after a few minutes (2 points)
- ○MMRC 4: Cannot leave house; breathless on dressing/undressing (3 points)

Body mass index
- ○>21 (0 points)
- ○≤21 (1 point)

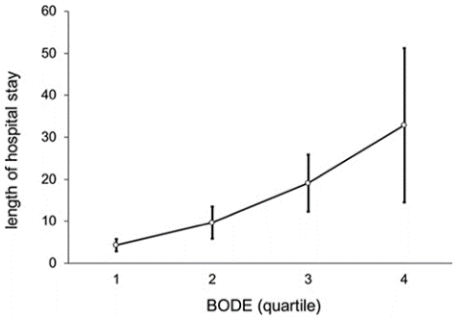
Approximate 4-year survival interpretation of BODE index[1132] [1133]:
0-2 points: 80%
3-4points: 67%
5-6 points: 57%
7-10 points: 18%

The BODE index is also reported to be able to **predict hospitalization**[1134], both regarding number of hospitalization and the length of hospital stay:



Linear trend of number of hospitalizations by BODE quartile ($p < 0.001$).
Ong KC et al 2005.

[1131] Celli BR, Cote CG, Marin JM, et al. The body-mass index, airflow obstruction, dyspnea, and exercise capacity index in chronic obstructive pulmonary disease. N Engl J Med 2004; 350:1005.
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[1134] Ong KC, Earnest A, Lu SJ. A multidimensional grading system (BODE index) as predictor of hospitalization for COPD. Chest 2005; 128:3810.

	 Linear trend of length of hospital stay by BODE quartile ($p < 0.001$). Ong KC et al 2005
Consequences	**Individual:** • Reduced working capacity and exercise tolerance • Breathlessness during routine or emergency duties • Need for treatment on board or urgent hospitalisation • Risk of respiratory failure in severe disease **Crew:** • Redistribution of duties • Need to care for an ill seafarer • Risks associated with MEDEVAC operations **Ship:** • Overburdening of remaining crew • Possible diversion or MEDEVAC • Hospitalisation, repatriation, and need for replacement crew • Operational disruption during emergencies if the individual cannot perform required tasks
Unmitigated risk	**Individual:** • **Mild COPD:** Acceptable; exacerbation risk is low and consequences usually manageable. • **Moderate COPD:** Borderline to unacceptable; exacerbations may impair safety-critical performance. • **Severe COPD:** Unacceptable due to high risk of acute deterioration and inability to meet physical capability requirements. **Crew:** • **Mild:** Acceptable. • **Moderate:** Acceptable to borderline; may require support. • **Severe:** Unacceptable due to risk of emergency care needs and operational burden. **Ship:** • Mild: Acceptable. • Moderate: Borderline; risk of MEDEVAC or operational disruption. • Severe: Unacceptable. **Overall unmitigated risk:** • **Mild COPD**: Acceptable. • **Moderate COPD:** Borderline to unacceptable depending on exacerbation history. • **Severe COPD:** Unacceptable

Mitigation	• Smoking cessation and lifestyle modification • Optimised pharmacological therapy (bronchodilators, inhaled corticosteroids where indicated) • Vaccination (influenza, pneumococcal) • Pulmonary rehabilitation • Regular follow-up by a specialist • Limitation of certificate duration to ensure review within validity period • Restriction of duties requiring high physical exertion • Restriction of sailing area (e.g., avoiding remote operations) • Ensuring access to required inhalers and medications on board • Avoidance of environmental triggers (dust, fumes, cold exposure)
Mitigated risk	**Individual:** • **Mild COPD:** Acceptable with regular follow-up and stable symptoms. • **Moderate COPD:** Acceptable only if well-controlled, with infrequent exacerbations and ability to meet physical capability requirements. • **Severe COPD:** Usually unacceptable even with mitigation. **Crew:** • Acceptable if the individual is stable and exacerbation risk is low. • Unacceptable if frequent exacerbations or severe disease. **Ship:** • Acceptable only when the individual is stable, adherent to treatment, and capable of performing emergency duties. • Unacceptable in severe or unstable disease. **Overall mitigated risk:** • **Mild COPD:** Acceptable. • **Moderate COPD:** Acceptable with restrictions or time-limited certification. • **Severe COPD:** Unacceptable
Recommendation	Individuals with COPD require regular monitoring. Even those with mild, stable disease typically need review within the two-year certificate period; therefore, a time-limited certificate is often appropriate. Those with recent exacerbations or more severe disease may require more frequent review and may be temporarily or permanently unfit for sea service. Assessment must consider the likelihood of exacerbation during the certificate period, the need for acute medical care, and the individual's ability to meet physical capability requirements, including emergency duties. A specialist report should outline: • Current medical regimen • Response to therapy • Functional status • Lung function results • Disease progression • Follow-up requirements

22.10.3 ASTHMA

J 45-46	Asthma (detailed assessment with information from specialist in all new entrants) Unpredictable episodes of severe	T – Until episode resolved, cause investigated (including any occupational link) and effective treatment regime in place In person under age 20 with hospital admission or oral steroid use in last three years P – If foreseeable likelihood of rapid life-threatening asthma attack while at sea or history of uncontrolled asthma, e.g. history of multiple hospital admissions.	R, L – Near-coastal waters only or on ship with doctor if history of moderate adult asthma, with good control with inhalers and no episodes requiring hospital admission or oral steroid use in last two years, or history of mild or exercise-induced asthma that requires regular treatment	Under age 20: If history of mild or moderate childhood asthma, but with no hospital admissions or oral steroid treatment in last three years and no requirements for continuing regular treatment Over age 20: If history of mild or exercise-induced asthma and no requirements for continuing regular treatment.

22.10.3.1 J45-46 - ASTHMA

Reviewed 2026-01-14

Significance	Asthma is a chronic inflammatory airway disease characterised by intermittent airway obstruction and bronchial hyper-responsiveness, with recurrent episodes of wheezing, breathlessness, chest tightness, and coughing. Symptoms may arise unpredictably and vary in severity from mild to life-threatening. For seafarers, asthma is significant because acute exacerbations may impair the ability to perform safety-critical duties, reduce physical capability during emergencies, or require medical care that is not available on board. Environmental exposures at sea—cold air, physical exertion, fumes, dust, humidity changes—may provoke symptoms. The condition therefore poses potential risks to the individual, the crew, and the safe operation of the ship.
Possible medical incident(s)	• Acute episodes of airway obstruction, with wheezing, dyspnoea, chest tightness, or cough • Exacerbations triggered by respiratory infections, allergens, exercise, cold air, fumes, or occupational exposures • Severe or near-fatal asthma attacks occurring unpredictably • Complicated respiratory infections due to impaired airway clearance • Sudden reduction in exercise tolerance during safety-critical tasks • Need for urgent medical treatment or MEDEVAC if symptoms cannot be controlled on board These incidents may compromise the individual's ability to work safely and may require emergency intervention.

Likelihood	Between 30% and 70% of children with asthma improve or become asymptomatic by early adulthood. Adults are less likely to experience complete remission[1135] [1136]. Asthma without comorbidities does not appear to reduce life expectancy [1137] [1138]. Asthma severity tends to remain stable over long periods (5–25 years) [1139] [1140] [1141]. Severe and difficult-to-treat asthma represents a minority of cases but accounts for a large proportion of morbidity. **Severity classification** according to the Global Initiative for Asthma (GINA 2006)[1142] as: • Intermittent • Mild persistent • Moderate persistent • Severe persistent. **Fatal and near-fatal asthma exacerbations** can occur sporadically and inexplicably in a minority of asthmatics whether the baseline level of disease activity is mild, moderate, or severe[1143] [1144]. Risk factors include: • Recent history of poorly controlled asthma symptoms indicates increased risk[1145] [1146] [1147], • Prior near-fatal asthma[1148] [1149] [1150] [1151]. Minor risk factors include • aeroallergens[1152] [1153] [1154],

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[1153] Bush RK, Prochnau JJ. Alternaria-induced asthma. J Allergy Clin Immunol 2004; 113:227.
[1154] Osborne ML, Pedula KL, O'Hollaren M, et al. Assessing future need for acute care in adult asthmatics: the Profile of Asthma Risk Study: a prospective health maintenance organization-based study. Chest 2007; 132:1151.

	• food allergy[1155] [1156] [1157], • aspirin and other NSAIDs[1158], e • excercise[1159], • genetic factors[1160] [1161], • illicit drugs[1162] [1163], • menstruation[1164], • respiratory viruses[1165], • smoking[1166] [1167] • and other factors. • The lower the FEV_1, the greater the risk[1168] [1169] [1170] [1171]. **Likelihood category:** • Intermittent or mild persistent asthma: Low likelihood (<5% per year) of severe exacerbation. • Moderate persistent asthma: Moderate likelihood (5–10% per year). • Severe persistent asthma: High likelihood (>10% per year) of severe or life-threatening exacerbation.
Consequences	**Individual:** • Consequences range from minimal impairment to life-threatening respiratory distress. • Symptoms may limit physical performance, impair concentration, or prevent participation in emergency duties. **Crew:** • Redistribution of duties • Caring for an ill seafarer • Risks associated with MEDEVAC operations

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	Ship: • Overburdening of remaining crew • Possible diversion or MEDEVAC • Hospitalisation, repatriation, and need for replacement crew • Operational disruption during emergencies if the individual cannot perform required tasks
Unmitigated risk	**Individual:** • Intermittent or mild persistent asthma: Borderline to acceptable; attacks may still occur unpredictably. • Moderate persistent asthma: Unacceptable due to risk of significant exacerbation without treatment. • Severe persistent asthma: Unacceptable due to high risk of rapid, life-threatening deterioration. **Crew:** • Mild: Acceptable. • Moderate: Borderline; may require emergency support. • Severe: Unacceptable due to risk of sudden severe attack. **Ship:** • Mild: Acceptable. • Moderate: Borderline to unacceptable depending on exposure to triggers and operational context. • Severe: Unacceptable due to risk of MEDEVAC, diversion, and operational instability. **Overall unmitigated risk:** • Mild asthma: Acceptable to borderline. • Moderate asthma: Borderline to unacceptable. • Severe asthma: Unacceptable.
Mitigation	• Optimised pharmacological therapy (controller and reliever inhalers) • Written asthma action plan • Patient education and adherence monitoring • Avoidance of known triggers where feasible • Smoking cessation • Vaccination (influenza, pneumococcal) • Regular specialists follow-up • Limitation of certificate duration to ensure review within validity period • Restriction of duties requiring high physical exertion • Restriction of sailing area (e.g., near-coastal waters or ships with a doctor) • Ensuring access to required inhalers and spare medication on board
Mitigated risk	**Individual:** • Intermittent or mild persistent asthma: Acceptable with good control and adherence to treatment. • Moderate persistent asthma: Acceptable only with good control, no recent exacerbations, and specialist confirmation. • Severe persistent asthma: Usually unacceptable even with mitigation. **Crew:** • Acceptable if the individual is stable, adherent to treatment, and has no recent severe exacerbations.

	Ship: • Acceptable only when the individual can reliably perform emergency duties and exacerbation risk is low. • Unacceptable in severe or unstable disease. **Overall mitigated risk:** • Mild asthma: Acceptable. • Moderate asthma: Acceptable with restrictions or time-limited certification. • Severe asthma: Unacceptable; temporary or permanent unfitness depending on prognosis.
Recommendation	Individuals at high risk of fatal or near-fatal asthma should not work at sea. Fitness assessment must consider current control, severity, exacerbation history, exposure to triggers, and access to medical care. A specialist report is recommended and should include: • Current treatment regimen • Response to therapy • Functional status • Lung function results • Exacerbation history • Follow-up requirements An individualised risk assessment is essential. Certification should be time-limited or restricted where appropriate

22.10.4 PNEUMOTHORAX

J 93	Pneumothorax (spontaneous or traumatic) Acute impairment from recurrence	T – 12 months after initial episode or shorter duration as advised by specialist P – After recurrent episodes unless pleurectomy or pleurodesis performed	R – Duties in harbour areas only once recovered	Normally 12 months after initial episode or shorter as advised by specialist. Post surgery based on advice of treating specialist

22.10.4.1 J93 - PNEUMOTHORAX

Reviewed 2026-01-14

Significance	Pneumothorax (spontaneous or traumatic) may present suddenly with chest pain and dyspnoea and can progress to respiratory compromise and, in tension pneumothorax, cardiovascular collapse. At sea, access to urgent imaging and specialist care is limited, and recurrence may occur without warning. The risk is particularly relevant for seafarers who may be exposed to changes in barometric pressure (flying to/from the vessel, diving, pressurised environments) and for those with underlying lung disease.

	Acute recurrence can impair the individual's ability to perform safety-critical duties, place additional burden on other crew, and necessitate diversion or MEDEVAC, thereby affecting safe ship operation.
Possible medical incident(s)	• Acute onset chest pain and dyspnoea due to recurrence of pneumothorax • Development of tension pneumothorax with haemodynamic instability • Respiratory failure in individuals with underlying lung disease (SSP) • Need for urgent medical evacuation, chest drain insertion, or surgery • Complications related to barometric pressure changes (air travel, diving) These incidents may lead to sudden incapacitation, impaired performance, and require urgent medical care not readily available at sea.
Likelihood	**Primary spontaneous pneumothorax (PSP):** Smoking increases the likelihood of PSP by approximately 22-fold in men and 8-fold in women, with incidence directly related to the amount smoked [1172]. Other risk factors: Marfan syndrome, homocystinuria, positive family history. Patients with PSP are typically tall, slender, young males [1173]. Recurrence risk after a first PSP is 30–50% over 1–5 years, highest in the first 30 days and mostly within the first year [1174] [1175]. Without intervention, a third or fourth pneumothorax occurs in 62% and 83% of patients respectively [1176]. Risk factors for recurrence: female gender, tall stature in men, low body weight, continued smoking and contralateral pneumothorax. **Likelihood category (PSP):** After first untreated PSP: Moderate to high recurrence risk over 1–5 years (>10% per year early after event) [1177]. Options for prevention of recurrence include video assisted thorascopic surgery (VATS), chemical pleurodesis and thoracotomy. **Secondary spontaneous pneumothorax (SSP)** Occurs as a complication of underlying lung disease (e.g. COPD, cystic fibrosis, primary or metastatic lung malignancy, necrotising pneumonia including TB). COPD accounts for 50–70% of SSP in one case series [1178].

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[1178] Noppen M, De Keukeleire T: Pneumothorax. Respiration. 2008;76(2):121.

	Recurrence rate in SSP associated with COPD is ~50% over 3 years, so definitive treatment is recommended after the first episode COPD [1179]. **Likelihood category (SSP):** High recurrence risk (>10% per year in early years), with higher severity. **Likelihood after preventive procedures:** VATS with bleb/bulla resection and pleurodesis: recurrence ~5% [1180] Chemical pleurodesis with tetracycline derivative: recurrence 20–25%[1181] Talc pleurodesis: recurrence 5 – 8% [1182] No procedure can guarantee absence of recurrence, but risk is significantly reduced.
Consequences	**Individual:** • Sudden chest pain, dyspnoea, and reduced exercise capacity • Risk of tension pneumothorax and haemodynamic compromise • In SSP, greater risk of respiratory failure and life-threatening deterioration • Possible need for urgent hospitalisation or surgery **Crew:** • Need to take over duties from the affected seafarer • Providing care and support during acute illness • Risks associated with MEDEVAC operations **Ship:** • Overburdening of remaining crew • Possible diversion from planned route • MEDEVAC, hospitalisation, repatriation, and need for replacement crew • Disruption of safe operations if the affected person has safety-critical duties
Unmitigated risk	**Individual:** • PSP after first episode (no intervention): Unacceptable, given 30–50% recurrence over 1–5 years and higher risk early. • Recurrent PSP without definitive procedure: Unacceptable due to high likelihood of further episodes. • SSP (any episode): Unacceptable due to high recurrence risk and more severe consequences. **Crew:** • PSP/SSP without definitive treatment: Unacceptable because sudden recurrence may require urgent support and MEDEVAC.

[1179] Light RW, O'Hara VS, Moritz TE, McElhinney AJ, Butz R, Haakenson CM, Read RC, Sassoon CS, Eastridge CE, Berger R: Intrapleural tetracycline for the prevention of recurrent spontaneous pneumothorax. Results of a Department of Veterans Affairs cooperative study. JAMA. 1990;264(17):2224

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[1182] Györik S, Erni S, Studler U, Hodek-Wuerz R, Tamm M, Chhajed PN: Long-term follow-up of thoracoscopic talc pleurodesis for primary spontaneous pneumothorax. Eur Respir J. 2007;29(4):757

	Ship: • PSP/SSP without definitive treatment: Unacceptable due to risk of diversion, MEDEVAC, and disruption of operations. **Overall unmitigated risk:** • PSP (first episode, untreated): Unacceptable. • Recurrent PSP or any SSP (untreated): Unacceptable.
Mitigation	• Smoking cessation and lifestyle modification. • Definitive preventive procedures where indicated (e.g. VATS with bleb/bulla resection and pleurodesis, chemical or talc pleurodesis, thoracotomy. • Sufficient interval after initial episode (often 12 months, or shorter/larger as advised by specialist). • Thorough assessment of underlying lung disease in SSP and its stability. • Specialist respiratory/thoracic surgical opinion before certification. • Limitation of certificate duration and requirement for regular review. • Restriction from duties or environments involving sudden barometric pressure changes (flying, diving, compressed-air work) unless cleared by a specialist. • Restriction of sailing area (e.g. harbour duties or near-coastal waters) where appropriate.
Mitigated risk	**Individual:** • PSP after definitive treatment (e.g. VATS with pleurodesis, low recurrence risk 5–8%): May be acceptable after adequate recovery and specialist clearance. • PSP after chemical pleurodesis (20–25% recurrence): Borderline; individual assessment needed, with preference for more definitive procedures in safety-critical roles. • SSP: Acceptable only if underlying lung disease is stable, recurrence risk reduced by definitive treatment, and specialist considers sea service reasonable. In many cases, risk remains high or unacceptable. **Crew:** • Acceptable if recurrence risk is low after definitive treatment and the individual is fully recovered and stable. **Ship:** • Acceptable if recurrence risk is low, underlying disease (if any) is stable, and the seafarer can safely perform routine and emergency duties, including in remote settings where appropriate. **Overall mitigated risk:** • PSP with definitive low-recurrence procedure and good recovery: Acceptable with possible restrictions and time-limited certification. • SSP even after treatment: Often borderline or unacceptable; careful individual assessment is essential.
Recommendation	Each patient must be assessed individually, considering: • Type of pneumothorax (PSP vs SSP) • Number of episodes and any recurrence • Type and effectiveness of any preventive procedure (VATS, pleurodesis, etc.)

	• Presence and severity of underlying lung disease, especially in SSP • Exposure to sudden barometric pressure changes (flying to/from ship, diving) For SSP, the underlying disease process and recurrence risk must be thoroughly evaluated before considering certification. After surgery or pleurodesis, fitness should be based on specialist advice and documented stability. Where any residual risk remains, time-limited certificates, duty restrictions, or sailing-area limitations should be considered; in cases of persistent high risk, temporary or permanent unfitness may be indicated.

22.11 K 00-99 DIGESTIVE SYSTEM

22.11.1 ORAL HEALTH

K 01-06	Oral health Acute pain from toothache. Recurrent mouth	T – If visual evidence of untreated dental defects or oral disease. P – If excess likelihood of dental emergency remains after treatment completed or person non-compliant with dental recommendations	R – Limited to near coastal waters, if criteria for full fitness not met and type of operation will allow for access to dental care without safety-critical manning issues for the vessel	If teeth and gums (gums alone if edentulous and with well-fitting dentures in good repair) appear to be good. No complex prosthesis or if dental check in last year with follow up completed and no problems since.

22.11.1.1 K00-14 - DENTAL PROBLEMS

Reviewed 2026-01-15

Significance	Dental and oral conditions are among the most common causes of ill-health at sea and frequently necessitate consultations in foreign ports. In 2023, dental problems rose from eighth to second place on MedSea's list of contacts with onshore health services [1183]. While many dental conditions cause limited disruption on shore, they may significantly impair working capacity at sea. Pain, infection, and functional impairment can develop rapidly, and dental problems are often difficult to manage on board. More than half of MedSea's dental cases require shoreside evaluation, a proportion higher than the average for other case categories.

[1183] https://britanniapandi.com/wp-content/uploads/2024/05/The-Hidden-Dangers-of-Poor-Dental-Hygiene-for-Seafarers.pdf

	Given the limited availability of dental treatment on most vessels, untreated or unstable dental disease may compromise the seafarer's ability to perform safety-critical tasks and may necessitate diversion, unscheduled port calls, or shore-leave to urgently see a dentist during port calls, thereby affecting the safety of the individual, the crew, and the safe operation of the ship.
Possible medical incident(s)	• Acute dental pain due to caries, pulpitis, periapical infection, or fractured teeth. • Bleeding gums or discomfort due to gingivitis or periodontitis. • Rapid progression of untreated oral disease during long voyages. Lifestyle factors associated with 24-hour operations at sea may increase the risk of dental and periodontal disease. These include irregular working watches, altered nutritional patterns with frequent snacking [1184] [1185], high consumption of caffeine and fermentable carbohydrates and widespread nicotine use[1186] [1187] [1188]. Studies of oral health on board have reported that oral hygiene during long voyages may be "totally neglected" [1189] with less frequent tooth-brushing than on shore [1190]. Many seafarers originate from countries with differing access to dental care and varying socio-economic, cultural, educational, and nutritional backgrounds, which may influence baseline oral health [1191].
Likelihood	Historical data indicate that dental conditions have long been a major cause of medical consultations in foreign ports. In the 1980s, among civilian seafarers without dental facilities on board, dental problems accounted for up to 66.9% of consultations in foreign ports [1192]. Nguyen et al. (2023) found dental caries prevalence around 88% among seafarers [1193]. Another study from a Bangkok hospital found that dental and periodontal problems was found in 43.5% of seafarers visiting their hospital during port calls [1194]. Periodontal, or gum disease is a common condition affecting the tissues that comprise the dental supporting structure. It is broadly classified as either gingivitis or periodontitis; these conditions are distinguished by the presence of alveolar bone involvement that occurs with periodontitis, and not with gingivitis [1195].

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Consequences	**Individual:** • Impaired working capacity due to pain or infection. • Need for analgesics or antibiotics. • Requirement for urgent dental care in port. **Crew:** Redistribution **of duties to compensate for the affected seafarer.** **Ship:** • Potential diversion or delay to obtain dental treatment. • Operational disruption due to reduced crew availability.
Unmitigated risk	**Individual:** • Unacceptable where there is visual evidence of untreated dental defects or oral disease, due to the high likelihood of deterioration during a voyage. • Acceptable only when teeth and gums appear healthy, or when edentulous with well-fitting dentures in good repair, and when a dental check-up within the last year has been completed with no outstanding issues. **Crew:** • Generally acceptable, unless the individual's condition is severe enough to impair safety-critical duties. **Ship:** • Acceptable for minor, non-progressive conditions. • Unacceptable where untreated or unstable disease creates a significant likelihood of acute deterioration requiring diversion or unscheduled port calls.
Mitigation	• Temporary unfitness (T) until dental defects or oral disease have been treated and stabilised. • Completion of a dental examination and treatment plan by a qualified dentist. • Confirmation that required follow-up treatment is completed before certification. • Reinforcement of oral hygiene practices and preventive measures. • Limitation of certificate duration where there is a history of recurrent dental disease or incomplete treatment. • Restricted certification (R) to near-coastal waters where full fitness criteria are not met but operational conditions allow timely access to dental care without compromising safe manning.
Mitigated risk	**Individual:** • Acceptable once acute disease is treated, oral health is stabilised, and the likelihood of recurrence is low. • Unacceptable if significant untreated disease remains, if the likelihood of recurrence remains high after treatment, or if the person is non-compliant with dental recommendations (P).

	Crew: • Acceptable once the individual is free of acute symptoms and able to perform assigned duties. **Ship:** • Acceptable for minor, treated conditions. • Unacceptable where residual disease or incomplete treatment poses a risk of acute deterioration during a voyage.
Recommendation	The oral cavity should always be inspected during the medical examination, and the examining doctor must be familiar with the appearance of healthy gingival tissues. Any person with evidence of acute dental disease should be considered temporarily unfit until reviewed by a dentist and a treatment plan has been agreed. An individualised risk assessment should then be undertaken, taking into account: • the nature and severity of the dental condition, • the proposed treatment plan and need for follow-up, • the current stage of treatment, and • the likelihood of recurrence or complications during the certificate period

22.11.2 PEPTIC ULCER

K 25-28	Peptic ulcer. Recurrence with pain, bleeding or perforation.	T – Until healing or cure by surgery or by control of helicobacter and on normal diet for 3 months. P – If ulcer persists despite surgery and medication	R – Consider case by case assessment for earlier return to near coastal duties	When cured and on normal diet for 3 months

22.11.2.1 K25-28 - PEPTIC ULCER (PUD)

2026-01-15

Significance	Peptic ulcer disease (PUD) may significantly impair a seafarer's ability to perform duties safely and effectively. Symptoms such as dyspepsia, pain, nausea, or early satiety may interfere with concentration, stamina, and operational performance. More importantly, peptic ulcers may progress unpredictably, and complications such as bleeding, perforation, gastric outlet obstruction, or penetration may arise suddenly and require urgent medical intervention. At sea, where diagnostic and therapeutic options are limited, such complications may pose a direct risk to the health of the individual, require diversion or medical evacuation, and impose operational burdens on the crew and vessel. For these reasons, active or unstable peptic ulcer disease represents a potentially significant risk to the individual, the crew, and the safe operation of the ship.

Possible medical incident(s)	• Dyspepsia or epigastric pain interfering with work performance. • Acute upper gastrointestinal bleeding. • Gastric outlet obstruction. • Penetration or fistulisation into adjacent structures. • Perforation of the stomach or duodenum. These events may occur with little warning, particularly in individuals with asymptomatic ulcers or in those using non-steroidal anti-inflammatory drugs (NSAIDs).
Likelihood	**Natural course - untreated:** Historical data from the period before Helicobacter pylori eradication therapy and proton pump inhibitors (PPIs) illustrate the natural history of the disease. In one study following patients for 12 months after documented healing of duodenal ulcers, relapse occurred in 74% of case [1196]: • 33% had one recurrence • 24% had two recurrences • 17% experienced three or more recurrences **Asymptomatic disease** Approximately 70% of peptic ulcers are asymptomatic [1197]. Between 43% and 87% of patients with bleeding peptic ulcers present without antecedent dyspepsia or other warning symptoms [1198] [1199] [1200]. **Complications** • Perforation occurs in 2–10% of patients with peptic ulcer disease [1201], most commonly in prepyloric ulcers, followed by duodenal bulb ulcers [1202]. • NSAID use, including acetylsalicylic acid, significantly increases the risk of bleeding in individuals with prior peptic ulcer disease [1203]. • The annual risk of complications in chronic peptic ulcer disease is 2–3% per year [1204]. • Geographical variation is substantial. A comparison between the United States and Nigeria demonstrated marked differences in complication patterns[1205] [1206].

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	<table><tr><th>Complication</th><th>United States</th><th>Nigeria</th></tr><tr><td>Haemorrhage</td><td>73%</td><td>10%</td></tr><tr><td>Perforation</td><td>9%</td><td>30%</td></tr><tr><td>Obstruction</td><td>3%</td><td>56%</td></tr></table> These differences may reflect regional variations in NSAID use, H. pylori prevalence, and patterns of gastritis. Peptic ulcer bleeding is most common in older individuals [1207]. NSAID use is the strongest identifiable risk factor, with reported relative risks ranging from 2.7 to 33.9 [1208]. Studies have also shown that the risk is drug-specific and dose-dependent: in a study of 2777 patients, the overall relative risk (RR) of bleeding associated with NSAID use was 5.3 (95% CI 4.5-6.2) [1209]. **Recurrence** Even with continued PPI therapy, 5–30% of peptic ulcers recur within the first year, depending on whether H. pylori has been successfully eradicated [1210] [1211]. Recurrent ulcers are usually due to persistent H. pylori infection or ongoing NSAID use. When the underlying cause cannot be removed (e.g., unavoidable NSAID use or non-H. pylori, non-NSAID ulcers), recurrence is frequent [1212]. **Healing:** Approximately 60% of peptic ulcers heal spontaneously, but with H. pylori eradication, healing rates exceed 90% [1213] [1214] [1215] [1216] [1217]. 5–10% of ulcers are refractory to PPI therapy [1218].
Consequences	**Individual:** • Symptoms interfering with work performance. • Risk of acute complications (bleeding, perforation, obstruction).

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	Crew: • Redistribution of duties. • Need to care for an ill crewmember. • Increased risks associated with medical evacuation. **Ship:** • Potential diversion or delay. • MEDEVAC with associated operational and safety implications. • Hospitalisation, repatriation, and need for crew replacement.
Unmitigated risk	**Individual:** • Unacceptable if the ulcer is active, if the underlying cause has not been removed, if the seafarer is non-compliant with therapy, or if NSAID use cannot be discontinued. • Acceptable only when the ulcer is fully healed, the individual is on a normal diet for at least three months, and no risk factors for recurrence remain. **Crew:** • Generally acceptable, provided the individual is cured and asymptomatic. **Ship:** • Acceptable when the ulcer is healed and recurrence risk is low. • Unacceptable if the ulcer is active or if the likelihood of recurrence or complications remains high.
Mitigation	• Completion of appropriate treatment, including H. pylori eradication where indicated. • Secondary prevention measures (avoidance of NSAIDs, smoking cessation, management of comorbidities). • Follow-up endoscopy or specialist review as clinically indicated. • Restricted certification (R) for near-coastal service may be considered on a case-by-case basis if early return to duty is desirable and operational conditions allow timely access to medical care.
Mitigated risk	**Individual:** • Acceptable once the ulcer is cured, the seafarer has been on a normal diet for at least three months, and risk factors for recurrence have been addressed. • Unacceptable if the ulcer remains active, if the underlying cause persists, if compliance is poor, or if NSAID use continues. **Crew:** • Acceptable once the individual is cured and asymptomatic. **Ship:** • Acceptable when the ulcer is healed and recurrence risk is low. • Unacceptable if active disease or high recurrence risk persists.
Recommendation	Key elements in assessing the risk of recurrent or refractory ulcers include: • Compliance with antisecretory therapy.

	• Continued or unavoidable NSAID use. • Use of medications or substances associated with ulcer formation or impaired healing. • Risk factors for poor ulcer healing, including smoking and relevant comorbidities. An individualised risk assessment should be undertaken in all cases, taking into account the underlying cause, treatment response, and likelihood of recurrence during the certificate period.

22.11.3 K40-44 - HERNIAS

K 40-44	Hernias – Inguinal and Femoral. Likelihood of strangulation	T – Until surgically investigated to confirm no likelihood of strangulation and, if required, treated.	R – Untreated. Consider case by case assessment for near coastal waters	When satisfactorily treated or exceptionally when surgeon reports there is no likelihood of strangulation
	Hernias – umbilical, ventral Instability of abdominal wall on bending and lifting	Case-by-case assessment depending on severity of symptoms or impairment. Consider implications of regular heavy whole-body physical effort	Case-by-case assessment depending on severity of symptoms or impairment. Consider implications of regular heavy whole-body physical effort	Case-by-case assessment depending on severity of symptoms or impairment. Consider implications of regular heavy whole-body physical effort
	Hernias – diaphragmatic (hiatus) Reflux of stomach contents and acid causing heartburn, pain, triggered by bending and lifting	Case-by-case assessment based on severity of symptoms when lying down, sleeping, bending and lifting, and the impairment caused thereby.	Case-by-case assessment based on severity of symptoms when lying down, sleeping, bending and lifting, and the impairment caused thereby.	Case-by-case assessment based on severity of symptoms when lying down, sleeping, bending and lifting, and the impairment caused thereby.

22.11.3.1 K40 - INGUINAL AND K41 - FEMORAL HERNIAS

Reviewed 2026-01-15

Significance	Inguinal and femoral hernias may impair a seafarer's ability to perform physically demanding tasks, particularly those involving lifting, bending, or prolonged standing. The principal concern is the risk of incarceration or strangulation, which may occur unpredictably and cannot be definitively managed on board. A strangulated hernia constitutes a surgical emergency. At sea, where diagnostic and therapeutic options are limited, such an event may pose a direct threat to the individual's health, require diversion or medical evacuation, and disrupt safe manning and vessel operations. For these reasons, untreated or

	symptomatic groin hernias represent a potentially significant risk to the individual, the crew, and the safe operation of the ship.
Possible medical incident(s)	Groin hernias may present with: • An asymptomatic or incidental finding on physical examination. • Groin or pelvic discomfort or pain, particularly when intra-abdominal pressure increases (heavy lifting, straining, prolonged standing). • Acute incarceration or strangulation, presenting with severe pain, irreducible swelling, and risk of bowel ischaemia. These events may arise suddenly and require urgent surgical intervention.
Likelihood	**Risk factors for hernia development** include the following[1219] [1220] [1221] [1222] [1223]: • Previous hernia or prior hernia repair (including childhood) • Older age • Male sex • Caucasian ethnicity • Chronic cough • Chronic constipation • Abdominal wall injury • Smoking • Family history of hernia **Risk of incarceration and strangulation** • The annual incidence of incarceration or strangulation is estimated at 0.3–3% per year. Risk factors include advancing age, femoral hernia and recurrent hernia [1224] [1225] [1226]. • Femoral hernias are particularly prone to strangulation [1227]. • In two trials comparing elective repair with watchful waiting, strangulation occurred in the control groups at rates of: • 1.8 per 1,000 patient-years (0.18% per year) • 7.9 per 1,000 patient-years (0.79% per year) [1228] [1229]. • Risk factors associated with incarceration and the need for emergent hernia surgery include advancing age, femoral hernia, and recurrent

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	hernia [1230] [1231] [1232]. Although all groin hernias may strangulate, femoral hernias carry the highest risk [1233].
Consequences	**Individual:** • Pain and functional impairment. • Risk of acute incarceration or strangulation requiring emergency surgery. • Inability to work safely if symptoms worsen during physical tasks. **Crew:** • Redistribution of duties. • Need to care for an ill crewmember. • Increased risks associated with medical evacuation. **Ship:** • Potential diversion or delay. • MEDEVAC with associated operational and safety implications. • Disruption of safe manning.
Unmitigated risk	**Individual:** • Unacceptable if there is any possibility of incarceration or if symptoms interfere with working capacity. • Acceptable only when a surgeon has confirmed that there is no likelihood of strangulation, or after satisfactory surgical repair. **Crew:** Usually acceptable, provided the individual is asymptomatic and not at risk of acute deterioration. **Ship:** • Acceptable only if the hernia does not impair work performance and there is no possibility of incarceration. • Unacceptable if untreated and at risk of strangulation.
Mitigation	• Surgical repair, which is the preferred treatment for symptomatic hernias or those with any risk of incarceration. • Specialist surgical assessment to determine the risk of strangulation. • Restricted certification (R) for near-coastal service may be considered if the hernia is untreated but assessed as low-risk and operational conditions allow timely access to medical care. • Limitation of certificate duration where follow-up is required
Mitigated risk	**Individual:** Acceptable once the hernia has been satisfactorily repaired or when a surgeon confirms no risk of strangulation. Unacceptable if symptoms persist, if the hernia is recurrent and untreated, or if the risk of incarceration remains.

[1230] Neutra R, Velez A, Ferrada R, Galan R. Risk of incarceration of inguinal hernia in Cell Colombia. J Chronic Dis 1981; 34:561.
[1231] Gallegos NC, Dawson J, Jarvis M, Hobsley M. Risk of strangulation in groin hernias. Br J Surg 1991; 78:1171.
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[1233] McIntosh A, Hutchinson A, Roberts A, Withers H. Evidence-based management of groin hernia in primary care--a systematic review. Fam Pract 2000; 17:442.

	Crew: Acceptable once the individual is asymptomatic and not at risk of acute deterioration. **Ship:** Acceptable when the hernia is treated or confirmed safe. Unacceptable if untreated and at risk of incarceration.
Recommendation	A thorough abdominal and groin examination should be performed at each medical assessment. Any suspected inguinal or femoral hernia should prompt referral for surgical evaluation. Certification should only be considered once: • the hernia has been surgically repaired, or • a surgeon has confirmed that there is no likelihood of strangulation, or • a restricted certificate is appropriate for near-coastal service after case-by-case assessment.

22.11.3.2 K43 – VENTRAL HERNIA

Reviewed 2026-01-16

Significance	A ventral hernia may impair the seafarer's ability to perform physically demanding tasks, particularly those involving bending, lifting, pushing, or sustained whole-body effort. The condition carries a risk of incarceration or strangulation, which may lead to acute abdominal pain, bowel obstruction, or other complications requiring urgent medical intervention. Such events at sea may compromise the health and safety of the individual and, in severe cases, necessitate medical evacuation, thereby affecting crew safety and the safe operation of the vessel.
Possible medical incident(s)	• Reduced physical capability due to discomfort, pain, or abdominal wall instability. • Episodes of abdominal pain, nausea, or vomiting. • Acute incarceration or strangulation of the hernia, potentially leading to bowel obstruction or ischaemia. • Sudden deterioration requiring urgent surgical management.
Likelihood	**Complications** Individuals with a truly asymptomatic ventral hernia may be managed non-operatively if they prefer to avoid surgical repair [1234] [1235] [1236] [1237] [1238]. In several small non-randomised studies, the mean annual incidence of acute presentation (e.g., incarceration or obstruction) during non-operative management was approximately 2.6% per year (reported range 0–20%) [1239].

[1234] Holihan JL, Henchcliffe BE, Mo J, et al. Is Nonoperative Management Warranted in Ventral Hernia Patients With Comorbidities?: A Case-matched, Prospective, Patient-centered Study. Ann Surg 2016; 264:585.
[1235] https://www.uptodate.com/contents/management-of-ventral-hernias/abstract/11
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[1238] Holihan JL, Flores-Gonzalez JR, Mo J, et al. A Prospective Assessment of Clinical and Patient-Reported Outcomes of Initial Non-Operative Management of Ventral Hernias. World J Surg 2017; 41:1267.
[1239] Liang MK, Holihan JL, Itani K, et al. Ventral Hernia Management: Expert Consensus Guided by Systematic Review. Ann Surg 2016.

	However, seafarers should be counselled that the cumulative lifetime risk of acute presentation may be substantial, and non-operative management may fail after the first one to two years in many patients [1240]. **Likelihood category:** • For asymptomatic hernias under non-operative management: Low to Moderate (approximately 2–10% per year). • For symptomatic hernias or those with large defects: Moderate to High, depending on clinical features. **Recurrence after repair** • Primary ventral hernia repair: recurrence 5–10% at two years [1241]. • Ventral incisional hernias: recurrence 25–43% at three years [1242]. • Mesh repair is recommended for defects >1 cm due to lower recurrence risk [1243]. • Simple suture repair is associated with recurrence rates exceeding 50%. Recurrence rates following mesh repair still reaches 20% or more [1244] [1245] [1246] [1247] [1248] [1249]. • Laparoscopic repair has been associated with recurrence rates <10% in some series [1250] [1251]. • Recurrence risk increases with each subsequent repair [1252].
Consequences	**Individual:** Consequences range from minor discomfort and reduced work tolerance to severe abdominal pain, bowel obstruction, or strangulation requiring emergency surgery. **Crew:** Generally minimal unless acute complications occur.

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[1245] Kaufmann R, Halm JA, Eker HH, et al. Mesh versus suture repair of umbilical hernia in adults: a randomised, double-blind, controlled, multicentre trial. Lancet 2018; 391:860.
[1246] Nguyen MT, Berger RL, Hicks SC, et al. Comparison of outcomes of synthetic mesh vs suture repair of elective primary ventral herniorrhaphy: a systematic review and meta-analysis. JAMA Surg 2014; 149:415.
[1247] Christoffersen MW, Helgstrand F, Rosenberg J, et al. Lower reoperation rate for recurrence after mesh versus sutured elective repair in small umbilical and epigastric hernias. A nationwide register study. World J Surg 2013; 37:2548.
[1248] Shankar DA, Itani KMF, O'Brien WJ, Sanchez VM. Factors Associated With Long-term Outcomes of Umbilical Hernia Repair. JAMA Surg 2017; 152:461.
[1249] Arroyo A, García P, Pérez F, et al. Randomized clinical trial comparing suture and mesh repair of umbilical hernia in adults. Br J Surg 2001; 88:1321.
[1250] Heniford BT, Park A, Ramshaw BJ, Voeller G. Laparoscopic repair of ventral hernias: nine years' experience with 850 consecutive hernias. Ann Surg 2003; 238:391.
[1251] Ujiki MB, Weinberger J, Varghese TK, et al. One hundred consecutive laparoscopic ventral hernia repairs. Am J Surg 2004; 188:593.
[1252] Holihan JL, Alawadi Z, Martindale RG, et al. Adverse Events after Ventral Hernia Repair: The Vicious Cycle of Complications. J Am Coll Surg 2015; 221:478.

	Ship: In cases of incarceration or strangulation, urgent MEDEVAC, diversion, hospitalisation, repatriation, and crew replacement may be required, with operational and safety implications.
Unmitigated risk	**Individual:** Unacceptable in symptomatic hernias or where there is any suspicion of incarceration risk. May be acceptable in small, asymptomatic hernias with stable findings and no impairment. **Crew:** Acceptable unless the individual is at risk of sudden incapacitation. **Ship:** Unacceptable if there is a realistic risk of acute deterioration requiring emergency intervention at sea. **Overall,** the unmitigated risk depends on symptom severity, hernia size, abdominal wall stability, and the likelihood of acute complications.
Mitigation	• Surgical repair (preferably mesh repair for defects >1 cm). • Post-operative follow-up to confirm adequate healing and absence of recurrence. • Restriction of duties involving heavy lifting or strenuous physical effort until stability is confirmed. • Restriction to near-coastal voyages may be considered in selected asymptomatic cases where a surgeon has confirmed low likelihood of incarceration. • Time-limited medical certificate during recovery or while awaiting surgical evaluation.
Mitigation	**Individual:** Following successful surgical repair and adequate recovery, the risk is generally acceptable. **Crew:** Acceptable once the risk of acute deterioration is removed. **Ship:** Acceptable when the likelihood of sudden incapacitation or need for emergency evacuation is low. If the hernia is untreated and symptomatic, or if a surgeon cannot confirm a low risk of incarceration, the mitigated risk may remain unacceptable.
Recommendation	• Surgical evaluation is recommended for all ventral hernias to assess the risk of incarceration and determine the need for repair. • Specialist surgical opinion should be obtained in cases of large defects, recurrent hernias, or previous failed repairs. • Additional investigations (e.g., imaging) may be required to assess defect size and abdominal wall integrity.

22.11.3.3 K44 - HIATUS HERNIA (DIAPHRAGMATIC)

Reviewed 2026-01-16

Significance	Hiatus hernia may impair a seafarer's ability to perform duties that involve bending, lifting, or working in positions that increase intra-abdominal pressure. Type I (sliding) hernias are often asymptomatic, but Type II–IV (para-oesophageal) hernias may cause gastro-oesophageal reflux, dysphagia, or chest discomfort. Although serious complications are uncommon, para-oesophageal hernias can lead to acute gastric volvulus, obstruction, strangulation, or perforation, all of which may require urgent surgical intervention. Such events at sea may compromise the health and safety of the individual and, in severe cases, necessitate medical evacuation, thereby affecting crew safety and the safe operation of the vessel.
Possible medical incident(s)	• Type I (sliding hernia): Usually asymptomatic; may cause mild reflux symptoms. • Type II–IV (para-oesophageal hernia): • Gastro-oesophageal reflux disease (GERD): heartburn, regurgitation, dysphagia. • Complications: erosive oesophagitis, Barrett's oesophagus, oesophageal stricture [Reference needed]. • Acute complications: gastric volvulus, uncontrolled bleeding, obstruction, strangulation, perforation, or respiratory compromise secondary to herniation.
Likelihood	**Emergent repair** is required in patients presenting with gastric volvulus, uncontrolled bleeding, obstruction, strangulation, perforation, or respiratory compromise due to a para-oesophageal hernia [1253] [1254] [1255] [1256] [1257] [1258]. The annual risk of developing acute symptoms requiring emergency surgery in asymptomatic para-oesophageal hernias is <2% per year, and this risk decreases markedly after the age of 65 [1259]. **Likelihood category:** • Type I hernia: Very low to low (<2% per year). • Asymptomatic para-oesophageal hernia: Low (<2% per year). • Symptomatic para-oesophageal hernia: Moderate to high, depending on severity and clinical features.

[1253] Kaiser LR, Singal S. Diaphragm. In: Surgical Foundations: Essentials of Thoracic Surgery, Elsevier Mosby, Philadelphia, PA 2004. p.294.
[1254] Miller JI Jr. Chapter 89. Bacterial infections of the lungs and bronchial compressive disorders. In: General Thoracic Surgery, 7th ed, Shields TW, LoCicero J, Reed CE, Feins RH. (Eds), Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia 2009. Vol 1, p.294.
[1255] Davis SS Jr. Current controversies in paraesophageal hernia repair. Surg Clin North Am 2008; 88:959.
[1256] Stylopoulos N, Gazelle GS, Rattner DW. Paraesophageal hernias: operation or observation? Ann Surg 2002; 236:492.
[1257] Hill LD. Incarcerated paraesophageal hernia. A surgical emergency. Am J Surg 1973; 126:286.
[1258] Skinner DB, Belsey RH. Surgical management of esophageal reflux and hiatus hernia. Long-term results with 1,030 patients. J Thorac Cardiovasc Surg 1967; 53:33.
[1259] Stylopoulos N, Gazelle GS, Rattner DW. Paraesophageal hernias: operation or observation? Ann Surg. 2002 Oct;236(4):492-500; discussion 500-1. doi: 10.1097/00000658-200210000-00012. PMID: 12368678; PMCID: PMC1422604.

	Repair and recurrence: The optimal management of asymptomatic patients with paraesophageal hernias is controversial[1260]. While a few experts recommend prophylactic surgical treatment even in the absence of symptoms, most experts advocate against it as the annual risk of developing acute symptoms requiring emergent surgery is less than 2 percent, the risk decreases exponentially after 65 years, and the mortality rate from elective paraesophageal hernia repair is approximately 1.4 percent [1261] [1262] [1263] [1264] [1265]. **Laparoscopic repair:** • Clinical recurrence: 10.2% (range 3–33%) in a several studies [1266] [1267] [1268]. • Radiographic recurrence: 25% [1269]. **Open repair:** • Reported clinical recurrence rates vary widely: 0–44% [1270] [1271] [1272] [1273]. **Transthoracic repair**: In two large studies (94 and 240 patients), clinical recurrence requiring reoperation occurred in 2.1% and 1.7% respectively [1274] [1275].
Consequences	**Individual:** Consequences range from minor reflux symptoms to severe complications requiring emergency surgery. Individual assessment is required. **Crew:** Usually none unless acute deterioration occurs. **Ship:** Consequences range from minor operational disruption to significant impact if emergency evacuation, diversion, hospitalisation, or crew replacement becomes necessary.

[1260] Davis SS Jr. Current controversies in paraesophageal hernia repair. Surg Clin North Am 2008; 88:959.
[1261] Stylopoulos N, Gazelle GS, Rattner DW. Paraesophageal hernias: operation or observation? Ann Surg 2002; 236:492.
[1262] Allen MS, Trastek VF, Deschamps C, Pairolero PC. Intrathoracic stomach. Presentation and results of operation. J Thorac Cardiovasc Surg 1993; 105:253.
[1263] Hallissey MT, Ratliff DA, Temple JG. Paraoesophageal hiatus hernia: surgery for all ages. Ann R Coll Surg Engl 1992; 74:23.
[1264] Pitcher DE, Curet MJ, Martin DT, et al. Successful laparoscopic repair of paraesophageal hernia. Arch Surg 1995; 130:590.
[1265] Kohn GP, Price RR, DeMeester SR, et al. Guidelines for the management of hiatal hernia. Surg Endosc 2013; 27:4409.
[1266] Rosen M, Brody F, Ponsky J, Walsh RM, Rosenblatt S, Duperier F, Fanning A, Siperstein A. Recurrence after laparoscopic ventral hernia repair. Surg Endosc. 2003 Jan;17(1):123-8. doi: 10.1007/s00464-002-8813-y. Epub 2002 Sep 23. PMID: 12360375.
[1267] Bittner R, Bain K, Bansal VK, et al.. Update of Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))-Part A. Surg Endosc. 2019 Oct;33(10):3069-3139. doi: 10.1007/s00464-019-06907-7. Epub 2019 Jun 27. Erratum in: Surg Endosc. 2019 Oct;33(10):3140-3142. doi: 10.1007/s00464-019-06977-7. PMID: 31250243; PMCID: PMC6722153.
[1268] Campanile, F.C., Podda, M., Pecchini, F. et al. Laparoscopic treatment of ventral hernias: the Italian national guidelines. Updates Surg 75, 1305–1336 (2023). https://doi.org/10.1007/s13304-023-01534-3
[1269] Rathore MA, Andrabi SI, Bhatti MI, et al. Metaanalysis of recurrence after laparoscopic repair of paraesophageal hernia. JSLS 2007; 11:456.
[1270] Geha AS, Massad MG, Snow NJ, Baue AE. A 32-year experience in 100 patients with giant paraesophageal hernia: the case for abdominal approach and selective antireflux repair. Surgery 2000; 128:623.
[1271] Low DE, Unger T. Open repair of paraesophageal hernia: reassessment of subjective and objective outcomes. Ann Thorac Surg 2005; 80:287.
[1272] Ferri LE, Feldman LS, Stanbridge D, et al. Should laparoscopic paraesophageal hernia repair be abandoned in favor of the open approach? Surg Endosc 2005; 19:4.
[1273] Carlson MA, Condon RE, Ludwig KA, Schulte WJ. Management of intrathoracic stomach with polypropylene mesh prosthesis reinforced transabdominal hiatus hernia repair. J Am Coll Surg 1998; 187:227.
[1274] Patel HJ, Tan BB, Yee J, et al. A 25-year experience with open primary transthoracic repair of paraesophageal hiatal hernia. J Thorac Cardiovasc Surg 2004; 127:843.
[1275] Maziak DE, Todd TR, Pearson FG. Massive hiatus hernia: evaluation and surgical management. J Thorac Cardiovasc Surg 1998; 115:53.

Unmitigated risk	**Individual:** Acceptable for asymptomatic Type I hernias and stable para-oesophageal hernias with low risk of acute complications. Unacceptable for symptomatic para-oesophageal hernias or where there is any suspicion of volvulus, obstruction, or strangulation. **Crew:** Acceptable unless the individual is at risk of sudden incapacitation. **Ship:** Unacceptable if there is a realistic risk of acute deterioration requiring urgent intervention at sea. Overall, the unmitigated risk depends on symptom severity, hernia type, and the likelihood of acute complications.
Mitigation	• Specialist evaluation to determine hernia type, symptom severity, and risk of acute complications. • Optimisation of medical management for GERD (e.g., proton pump inhibitors) where appropriate. • Surgical repair for symptomatic para-oesophageal hernias or where a surgeon identifies a significant risk of volvulus or strangulation. • Post-operative follow-up to confirm adequate healing and absence of recurrence. • Restriction of duties involving heavy lifting or tasks that increase intra-abdominal pressure until stability is confirmed. • Restriction to near-coastal voyages may be considered in selected asymptomatic cases where a surgeon confirms a low risk of acute complications [Reference needed]. • Time-limited medical certificate during recovery or while awaiting specialist evaluation.
Mitigated risk	**Individual:** Ranges from acceptable to unacceptable depending on symptom control, hernia type, and specialist assessment. After successful surgical repair and adequate recovery, the risk is generally acceptable. **Crew:** Usually acceptable once the risk of acute deterioration is low. **Ship:** Ranges from acceptable to unacceptable depending on the likelihood of sudden deterioration and the operational context.

22.11.4 CROHNS DISEASE AND ULCERATIVE COLITIS

K 50, 51, 57, 58, 90	Non-infectious enteritis, colitis, Crohn's disease, diverticulitis, etc. Impairment and pain.	T – Until investigated and treated P – If severe or recurrent	R – Does not meet the requirements for unlimited medical certificate but rapidly developing recurrence unlikely. Near-coastal waters.	Case-by-case specialist assessment. Fully controlled with low likelihood of recurrence.

22.11.4.1 K50 - CROHN'S DISEASE (CD)

Reviewed 2026-01-16

Significance	Crohn's disease is a chronic inflammatory disorder that may significantly impair a seafarer's ability to perform routine and emergency duties. Symptoms such as abdominal pain, diarrhoea, fatigue, and weight loss can reduce work performance, while relapses or complications may require hospitalisation, specialist follow-up, or surgical intervention. Acute deterioration at sea may compromise the health and safety of the individual and, in severe cases, necessitate medical evacuation, thereby affecting crew safety and the safe operation of the vessel.
Possible medical incident(s)	**Cardinal symptoms** [1276]: • Abdominal pain, • Diarrhea, with or without gross bleeding • Fatigue • Weight loss **Potential complications:** • Fistulas • Phlegmon or abscess formation • Perianal disease • Malabsorption • Arthritis or arthropathy • Eye involvement (e.g., uveitis) • Skin disorders (e.g., erythema nodosum) • Primary sclerosing cholangitis and other hepatobiliary diseases • Secondary amyloidosis • Renal stones • Bone loss • Pulmonary involvement These complications may lead to sudden incapacitation, severe pain, sepsis, or the need for urgent surgical intervention.

[1276] Lichtenstein GR, Loftus EV, Isaacs KL, et al. ACG Clinical Guideline: Management of Crohn's Disease in Adults. Am J Gastroenterol 2018; 113:481.

Likelihood	**Disease course** • Crohn's disease typically follows a chronic, intermittent course. Approximately 20% of patients experience prolonged remission after the initial presentation [1277] [1278]. • The 10-year risk of surgical resection is nearly 50% [1279]. • Patients with Crohn's disease have an increased risk of haematological malignancies (standardised incidence ratio 14; 95% CI 6.7–25.9), although the risk of colon cancer is not increased [1280]. **Risk of complications** [1281] [1282] [1283] : • Intestinal complications occur in 50% of patients within 20 years of diagnosis. • Ileal involvement is associated with earlier onset of complications. • In one study, 53% developed stricturing or penetrating disease within 10 years. • Fistulas were present in 7% of patients at least 30 days before diagnosis • Perianal disease occurs in up to 40% of patients. • Gastroduodenal involvement: up to 15%. • Arthritis/arthropathy: approximately 20%. • Eye involvement: approximately 5%. • Skin disorders: approximately 10%. • Primary sclerosing cholangitis: approximately 5%. **Predictors of a severe course** include • age less than 40, • the presence of perianal Age <40 years, • Perianal or rectal disease, • Smoking, • Low educational level, • Initial requirement for glucocorticoids [1284] [1285]. In a cohort of 306 patients[1286], the **cumulative risk of developing stricturing or penetrating complications** was: • 19% at 90 days • 22% at 1 year • 34% at 5 years

[1277] Farmer RG, Whelan G, Fazio VW. Long-term follow-up of patients with Crohn's disease. Relationship between the clinical pattern and prognosis. Gastroenterology 1985; 88:1818.
[1278] Solberg IC, Vatn MH, Høie O, et al. Clinical course in Crohn's disease: results of a Norwegian population-based ten-year follow-up study. Clin Gastroenterol Hepatol 2007; 5:1430.
[1279] Frolkis AD, Dykeman J, Negrón ME, et al. Risk of surgery for inflammatory bowel diseases has decreased over time: a systematic review and meta-analysis of population-based studies. Gastroenterology 2013; 145:996.
[1280] Wang LH, Yang YJ, Cheng WC, et al. Higher Risk for Hematological Malignancies in Inflammatory Bowel Disease: A Nationwide Population-based Study in Taiwan. Am J Gastroenterol 2016; 111:1313.
[1281] Thia KT, Sandborn WJ, Harmsen WS, et al. Risk factors associated with progression to intestinal complications of Crohn's disease in a population-based cohort. Gastroenterology 2010; 139:1147.
[1282] Solberg IC, Vatn MH, Høie O, Stray N, Sauar J, Jahnsen J, Moum B, Lygren I, IBSEN Study Group. Clinical course in Crohn's disease: results of a Norwegian population-based ten-year follow-up study. Clin Gastroenterol Hepatol. 2007;5(12):1430.

[1283] Schwartz DA, Loftus EV Jr, Tremaine WJ, et al. The natural history of fistulizing Crohn's disease in Olmsted County, Minnesota. Gastroenterology 2002; 122:875.
[1284] Beaugerie L, Seksik P, Nion-Larmurier I, Gendre JP, Cosnes J. Predictors of Crohn's disease. Gastroenterology. 2006;130(3):650.
[1285] Cosnes J, Bourrier A, Nion-Larmurier I, Sokol H, Beaugerie L, Seksik P. Factors affecting outcomes in Crohn's disease over 15 years. Gut. 2012 Aug;61(8):1140-5. Epub 2012 Mar 2.
[1286] Thia KT, Sandborn WJ, Harmsen WS, Zinsmeister AR, Loftus EV Jr. Risk factors associated with progression to intestinal complications of Crohn's disease in a population-based cohort. Gastroenterology. 2010;139(4):1147.

	• 51% at 20 years
	
	From a **systematic review** and American College of Gastroenterology guideline [1287]:
	• Patients in remission for one year have an 80% likelihood of remaining in remission in subsequent years.
	• Patients with active disease in the past year have a 70% likelihood of remaining active the following year and a 50% chance of remission within three years.
	• Over the first eight years:
	  ○ 13% have a relapse-free course
	  ○ 20% have annual relapses
	  ○ 67% alternate between relapse and remission
	• Fewer than 5% have continuous active disease.
	• Recurrence of perianal fistulas after treatment is common (59–82%)
	
	Likelihood category:
	• Mild, stable disease in remission: Very low to low likelihood of acute deterioration.
	• Active disease or history of complications: Moderate to high likelihood of relapse or acute events.

Consequences	**Individual:** Consequences range from minor symptoms to severe abdominal pain, dehydration, sepsis, or the need for urgent surgery. **Crew:** Usually minor unless acute deterioration occurs. **Ship:** Consequences range from minor disruption to significant operational impact if MEDEVAC, diversion, hospitalisation, or crew replacement is required.
Unmitigated risk	**Individual:** Unacceptable in active disease, recent relapse, or where complications (e.g., fistulas, strictures, abscesses) are present. May be acceptable in stable remission with no impairment. **Crew**: Acceptable unless the individual is at risk of sudden incapacitation. **Ship/operations:** Unacceptable if there is a realistic risk of acute deterioration requiring urgent intervention at sea. **Overall**, unmitigated risk depends on disease activity, history of complications, medication requirements, and stability of remission.
Mitigation	• Optimised medical therapy (e.g., immunomodulators, biologics) with documented stability. • Regular specialists follow-up to confirm disease control and monitor for complications. • Assessment of medication side effects that may impair performance (e.g., corticosteroids).

[1287] Lichtenstein GR, Hanauer SB, Sandborn WJ, Practice Parameters Committee of American College of Gastroenterology. Management of Crohn's disease in adults. Am J Gastroenterol. 2009;104(2):465.

	• Restriction of duties during periods of active disease or medication adjustment. • Restriction to near-coastal voyages may be considered when recurrence risk is low and disease is fully controlled [Reference needed]. • Time-limited medical certificate during periods of instability or recent relapse.
Mitigated risk	**Individual:** Ranges from acceptable (stable remission, low recurrence risk) to unacceptable (active disease, recent complications). **Crew:** Generally acceptable once disease is stable. **Ship/operations:** Acceptable to unacceptable depending on recurrence risk, medication stability, and operational context.
Recommendation	Assessment must include a detailed specialist report describing: • Current disease status • Medication requirements and potential side effects • Risk of recurrence or complications • Need for follow-up • Any dietary requirements The seafarer's doctor must undertake a thorough history and examination and perform an individualised risk assessment, taking into account the operational demands of the intended post and voyage pattern.

22.11.4.2 K51 – ULCERATIVE COLITIS

Reviewed 2026-01-16

Significance	Ulcerative colitis is a chronic inflammatory bowel disease that may significantly impair a seafarer's ability to perform routine and emergency duties. Symptoms such as diarrhoea, abdominal pain, urgency, and fatigue can reduce work performance, while relapses or acute complications may require urgent medical treatment, hospitalisation, or surgical intervention. Acute deterioration at sea may compromise the health and safety of the individual and, in severe cases, necessitate medical evacuation, thereby affecting crew safety and the safe operation of the vessel.
Possible medical incident(s)	Diarrhoea, often severe, with more than 10 stools per day, accompanied by abdominal cramps and continuous rectal bleeding [1288]. • Acute complications including: • Severe gastrointestinal bleeding • Fulminant colitis • Toxic megacolon • Bowel perforation Extra-intestinal manifestations affecting:

[1288] Silverberg MS, Satsangi J, Ahmad T, et al. Toward an integrated clinical, molecular and serological classification of inflammatory bowel disease: report of a Working Party of the 2005 Montreal World Congress of Gastroenterology. Can J Gastroenterol 2005; 19 Suppl A:5A.

	• Musculoskeletal system • Eyes • Skin • Hepatobiliary system • Haematopoietic/coagulation pathways • Pulmonary system These events may lead to sudden incapacitation, severe pain, sepsis, or the need for urgent surgical intervention.
Likelihood	**Severity at presentation** [1289]: • Most patients present with mild disease. • 27% present with moderate disease. • 1% present with severe disease. **Risk of acute complications:** • Severe bleeding occurs in up to 10% of patients, and • Massive haemorrhage occurs in up to 3% and may require urgent colectomy [1290]. • Fulminant colitis (defined as >10 stools/day, continuous bleeding, abdominal pain, distension, fever, anorexia) carries a high risk of toxic megacolon and requires immediate intervention [1291] [1292]. • Perforation most commonly occurs as a consequence of toxic megacolon [1293]. **Need for colectomy:** Approximately 20 – 30% of patients with Ulcerative Colitis will require colectomy for acute complications or for medically intractable disease. The likelihood and timing of colectomy, depends on the extent of the disease and severity at presentation. As an example, for patients with pancolitis, the rate of colectomy is approximately 19% after 10 years, whilst 5% of patients who present with proctitis alone have undergone colectomy after 10 years [1294]. **Relapse risk:** Approximately 67% of patients experience at least one relapse within 10 years of diagnosis [1295].

[1289] Langholz E, Munkholm P, Nielsen OH, Kreiner S, Binder V. Incidence and prevalence of ulcerative colitis in Copenhagen county from 1962 to 1987. Scand J Gastroenterol. 1991 Dec;26(12):1247-56.
[1290] Becker JM. Surgical management of ulcerative colitis. In: Inflammatory Bowel Disease, MacDermott RP, Stenson WF (Eds), Elsevier, New York 1992. p.599.
[1291] Strong SA. Management of acute colitis and toxic megacolon. Clin Colon Rectal Surg. 2010 Dec;23(4):274-84. doi: 10.1055/s-0030-1268254. PMID: 22131898; PMCID: PMC3134807.
[1292] Macken L, Blaker PA. Management of acute severe ulcerative colitis (NICE CG 166). Clin Med (Lond). 2015 Oct;15(5):473-6. doi: 10.7861/clinmedicine.15-5-473. PMID: 26430189; PMCID: PMC4953235.
[1293] Yamada. Textbook of Gastroenterology, 4, Vol 2.
[1294] Solberg IC, Lygren I, Jahnsen J, Aadland E, Høie O, Cvancarova M, Bernklev T, Henriksen M, Sauar J, Vatn MH, Moum B, IBSEN Study Group. Clinical course during the first 10 years of ulcerative colitis: results from a population-based inception cohort (IBSEN Study). Scand J Gastroenterol. 2009;44(4):431-40.
[1295] Höie O, Wolters F, Riis L, Aamodt G, Solberg C, Bernklev T, Odes S, Mouzas IA, Beltrami M, Langholz E, Stockbrügger R, Vatn M, Moum B, European Collaborative Study Group of Inflammatory Bowel Disease (EC-IBD). Ulcerative colitis: patient characteristics may predict 10-yr disease recurrence in a European-wide population-based cohort. Am J Gastroenterol. 2007 Aug;102(8):1692-701. Epub 2007 Jun 6.

	Risk of relapse is increased by[1296] [1297]: • Younger age at diagnosis • Disease flare within two years of diagnosis • Fever or weight loss at presentation • Active disease in the preceding year. **Likelihood category:** • Mild, stable disease in remission: Very low to low likelihood of acute deterioration. • Active disease or history of severe complications: Moderate to high likelihood of relapse or acute events.
Consequences	**Individual:** Reduced work performance, dehydration, anaemia, severe abdominal pain, need for urgent medical treatment or hospitalisation**.** **Crew:** Need to take over duties, provide care, and manage risks associated with potential MEDEVAC. **Ship:** Possible overburdening of crew, operational disruption, diversion, MEDEVAC, hospitalisation, repatriation, and crew replacement.
Unmitigated risk	**Individual:** Unacceptable in active disease, recent relapse, or where complications (e.g., severe bleeding, toxic megacolon) are present. May be acceptable in stable remission with no impairment. **Crew**: Acceptable unless the individual is at risk of sudden incapacitation. **Ship:** Unacceptable if there is a realistic risk of acute deterioration requiring urgent intervention at sea. **Overall,** unmitigated risk depends on disease activity, history of complications, medication requirements, and stability of remission.
Mitigation	• Optimised medical therapy (e.g., aminosalicylates, corticosteroids, immunomodulators, biologics) with documented stability. • Regular specialists follow-up to confirm disease control and monitor for complications. • Assessment of medication side effects that may impair performance (e.g., corticosteroid-related fatigue or mood changes). • Restriction of duties during periods of active disease or medication adjustment. • Restriction to near-coastal voyages may be considered when recurrence risk is low and disease is fully controlled [Reference needed]. • Time-limited medical certificate during periods of instability or recent relapse.
Mitigated risk	**Individual:** Ranges from acceptable (stable remission, low recurrence risk) to unacceptable (active disease, recent complications). **Crew:** Usually acceptable once disease is stable.

[1296] Ha CY, Newberry RD, Stone CD, Ciorba MA. Patients with late-adult-onset ulcerative colitis have better outcomes than those with early onset disease. Clin Gastroenterol Hepatol. 2010;8(8):682.
[1297] Langholz E, Munkholm P, Davidsen M, Binder V. Course of ulcerative colitis: analysis of changes in disease activity over years. Gastroenterology. 1994;107(1):3.

	Ship: Acceptable to unacceptable depending on recurrence risk, medication stability, and operational context.

22.11.4.3 K57 - DIVERTICULA DISEASE

Reviewed 2026-01-16

Significance	Uncomplicated diverticulosis is often asymptomatic or associated with mild abdominal discomfort, bloating, flatulence, constipation, or intermittent diarrhoea. These symptoms rarely impair a seafarer's ability to perform routine or emergency duties. The primary concern relates to complications—including diverticular bleeding, diverticulitis, and segmental colitis—which may present acutely and require urgent medical treatment, hospitalisation, or surgical intervention. Such events at sea may compromise the health and safety of the individual and, in severe cases, necessitate medical evacuation, thereby affecting crew safety and the safe operation of the vessel.
Possible medical incident(s)	• Diverticular bleeding • Diverticulitis (simple or complicated) • Segmental colitis associated with diverticulosis (SCAD) • Potential complications of diverticulitis: • Abscess • Perforation • Strictures • Sepsis These events may lead to sudden incapacitation, severe abdominal pain, or the need for urgent surgical intervention.
Likelihood	**Diverticular bleeding:** • Occurs in approximately 5–15% of individuals with diverticulosis, and one-third of these bleeding episodes are massive [1298]. **Diverticulitis:** • Occurs in approximately 4–15% of individuals with diverticulosis [1299] [1300] [1301] [1302]. • Mean age at admission for acute diverticulitis is 63 years [1303].

[1298] Imbembo AL, Bailey RW. Diverticular disease of the colon. In: Textbook of Surgery, 14th ed, Sabiston DC Jr (Ed), Churchill Livingstone, 1992. p.910.
[1299] Parks TG. Natural history of diverticular disease of the colon. Clin Gastroenterol 1975; 4:53.
[1300] Strate LL, Modi R, Cohen E, Spiegel BM. Diverticular disease as a chronic illness: evolving epidemiologic and clinical insights. Am J Gastroenterol 2012; 107:1486.
[1301] Stollman NH, Raskin JB. Diagnosis and management of diverticular disease of the colon in adults. Ad Hoc Practice Parameters Committee of the American College of Gastroenterology. Am J Gastroenterol 1999; 94:3110.
[1302] Shahedi K, Fuller G, Bolus R, et al. Long-term risk of acute diverticulitis among patients with incidental diverticulosis found during colonoscopy. Clin Gastroenterol Hepatol 2013; 11:1609.
[1303] Etzioni DA, Mack TM, Beart RW Jr, Kaiser AM. Diverticulitis in the United States: 1998-2005: changing patterns of disease and treatment. Ann Surg 2009; 249:210.

	• Approximately 16% of admissions occur in individuals under 45 years[1304]. **Segmental colitis**: Pathogenesis remains incompletely understood [1305] [1306]. **Disease course and recurrence:** • Most patients with simple diverticulitis recover with medical therapy and do not require surgery. • One-third experience relapse within five years[1307]. • Some evidence indicates that colonic diverticular disease overall is associated with a small excess mortality compared to the general population [1308], but other studies conclude that recurrent episodes of diverticulitis do not necerrarily correlate with increaste meortaligi of worse outcomes [1309] [1310]. • Approximately 25% of patients remain symptomatic after surgical treatment and require ongoing therapy and follow-up [1311]. **Likelihood category:** • Uncomplicated diverticulosis: Very low to low likelihood of acute deterioration. • History of diverticulitis or recurrent disease: Moderate to high likelihood of relapse or complications.
Consequences	**Individual:** Consequences range from mild abdominal discomfort to severe abdominal pain, bleeding, sepsis, or perforation requiring urgent medical or surgical intervention. **Crew:** May need to take over duties, provide care, and manage risks associated with potential MEDEVAC. **Ship:** Possible operational disruption, diversion, MEDEVAC, hospitalisation, repatriation, and crew replacement.
Unmitigated risk	**Individual:** Acceptable in uncomplicated diverticulosis without symptoms or history of complications. Unacceptable in individuals with recent diverticulitis, recurrent disease, or risk of acute complications (e.g., bleeding, perforation). **Crew:** Acceptable unless the individual is at risk of sudden incapacitation.

[1304] Nguyen GC, Sam J, Anand N. Epidemiological trends and geographic variation in hospital admissions for diverticulitis in the United States. World J Gastroenterol 2011; 17:1600.
[1305] Ludeman L, Shepherd NA. What is diverticular colitis? Pathology 2002; 34:568.
[1306] Samasca, G.; Dumitrascu, D.L.; Silaghi, C.N.; Lupan, I.; Dumitrascu, D.I. Segmental Colitis Associated with Diverticulosis: Status Quo. J. Clin. Med. 2026, 15, 646. https://doi.org/10.3390/jcm15020646
[1307] Young-Fadok TM, Roberts PL, Spencer MP, et al. Colonic diverticular disease. Curr Prob Surg. 2000;37:459-514.
[1308] Cameron R. Walker M M, Thuresson M et al. Mortality risk increased in colonic diverticular disease: a nationwide cohort study. Ann Epid 2022;76:39-49. ISSN 1047-2797, https://doi.org/10.1016/j.annepidem.2022.10.006.
[1309]
Chapman JR, Dozois EJ, Wolff BG, Gullerud RE, Larson DR. Diverticulitis: a progressive disease? Do multiple recurrences predict less favorable outcomes? Ann Surg. 2006 Jun;243(6):876-830; discussion 880-3. doi: 10.1097/01.sla.0000219682.98158.11. PMID: 16772791; PMCID: PMC1570566.
[1310] Tursi A. Preventing recurrent acute diverticulitis with pharmacological therapies. Ther Adv Chronic Dis. 2013 Nov;4(6):277-86. doi: 10.1177/2040622313498809. PMID: 24179670; PMCID: PMC3807763.
[1311] Munson KD, Hensien MA, Jacob LN, et al. Diverticulitis: a comprehensive follow-up, Dis Colon Rectum. 1996;39:318-322.

	Ship: Unacceptable if there is a realistic risk of acute deterioration requiring urgent intervention at sea. **Overall,** unmitigated risk depends on disease severity, history of complications, recurrence risk, and stability of symptoms.
Mitigation	• Specialist evaluation to determine disease severity, recurrence risk, and need for ongoing follow-up. • Optimised medical management during and after episodes of diverticulitis. • Confirmation of full recovery before return to unrestricted duties. • Restriction of duties during periods of active symptoms or recent relapse. • Restriction to near-coastal voyages may be considered when recurrence risk is low and disease is stable • Time-limited medical certificate during periods of instability or recent complications.
Mitigated risk	**Individual:** Ranges from acceptable (stable disease, no recent complications) to unacceptable (recurrent diverticulitis, persistent symptoms, or high relapse risk). **Crew:** Usually acceptable once disease is stable. **Ship:** Acceptable to unacceptable depending on recurrence risk, symptom stability, and operational context.
Recommendation	Assessment should include specialist input addressing: • Severity of disease • Treatment requirements • Ongoing symptoms • Need for continued follow-up • Risk of relapse in the context of limited access to medical care at sea The seafarer's doctor must undertake a thorough history and examination and perform an individualised risk assessment, taking into account the operational demands of the intended post and voyage pattern.

22.11.4.4 K58 – IRRITABLE BOWEL SYNDROME

Reviewed 2026-01-16

Significance	Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterised by chronic abdominal pain, altered bowel habits, and variable symptom severity. Although common, only a minority of affected individuals seek medical attention [1312] [1313] [1314]. BS is associated with increased healthcare

[1312] Talley NJ, Zinsmeister AR, Van Dyke C, Melton LJ 3rd. Epidemiology of colonic symptoms and the irritable bowel syndrome. Gastroenterology 1991; 101:927.
[1313] Drossman DA, Li Z, Andruzzi E, et al. U.S. householder survey of functional gastrointestinal disorders. Prevalence, sociodemography, and health impact. Dig Dis Sci 1993; 38:1569.
[1314] Ford AC, Forman D, Bailey AG, et al. Irritable bowel syndrome: a 10-yr natural history of symptoms and factors that influence consultation behavior. Am J Gastroenterol 2008; 103:1229.

	utilisation and is reported to be one of the leading causes of work absenteeism [1315] [1316]. While IBS does not cause structural damage to the gastrointestinal tract, symptoms may interfere with a seafarer's ability to perform routine and emergency duties, particularly when access to toilet facilities is limited or when symptoms are unpredictable.
Possible medical incident(s)	• Chronic or recurrent abdominal pain • Altered bowel habits • Diarrhoea • Constipation • Urgency or incomplete evacuation • Bloating or abdominal distension • [Reference needed] • Although IBS does not cause life-threatening complications, symptoms may be severe enough to impair performance or require medical assessment.
Likelihood	**Prevalence:** A meta-analysis of eight international studies estimated the pooled prevalence of IBS at 11%, with substantial variation across geographic regions [1317]. **Associated conditions:** IBS is frequently associated with[1318] [1319] [1320] [1321] [1322]: • Fibromyalgia • Chronic fatigue syndrome (systemic exertion intolerance disease) • Gastro-oesophageal reflux disease • Functional dyspepsia • Non-cardiac chest pain • Psychiatric disorders, including major depression, anxiety, and somatisation. **Alarm features suggesting organic disease [1323]:** • Onset after age 50 • Rectal bleeding or melena • Nocturnal diarrhoea • Progressive abdominal pain • Unexplained weight loss • Laboratory abnormalities (iron-deficiency anaemia, elevated CRP, faecal calprotectin or lactoferrin)

[1315] Schuster MM. Diagnostic evaluation of the irritable bowel syndrome. Gastroenterol Clin North Am 1991; 20:269.
[1316] Sandler RS, Everhart JE, Donowitz M, et al. The burden of selected digestive diseases in the United States. Gastroenterology 2002; 122:1500.
[1317] Hungin AP, Whorwell PJ, Tack J, Mearin F. The prevalence, patterns and impact of irritable bowel syndrome: an international survey of 40,000 subjects. Aliment Pharmacol Ther 2003; 17:643.
[1318] Longstreth GF, Thompson WG, Chey WD, et al. Functional bowel disorders. Gastroenterology 2006; 130:1480.
[1319] Lovell RM, Ford AC. Prevalence of gastro-esophageal reflux-type symptoms in individuals with irritable bowel syndrome in the community: a meta-analysis. Am J Gastroenterol 2012; 107:1793.
[1320] Whorwell PJ, McCallum M, Creed FH, Roberts CT. Non-colonic features of irritable bowel syndrome. Gut 1986; 27:37.
[1321] Hershfield NB. Nongastrointestinal symptoms of irritable bowel syndrome: an office-based clinical survey. Can J Gastroenterol 2005; 19:231.
[1322] Chey WD, Kurlander J, Eswaran S. Irritable bowel syndrome: a clinical review. JAMA 2015; 313:949.
[1323] American College of Gastroenterology Task Force on Irritable Bowel Syndrome, Brandt LJ, Chey WD, et al. An evidence-based position statement on the management of irritable bowel syndrome. Am J Gastroenterol 2009; 104 Suppl 1:S1.

	• Family history of inflammatory bowel disease or colorectal cancer **Disease course:** IBS is typically chronic with fluctuating severity. In a systematic review with follow-up ranging from six months to six years [1324]: • 2–5% of patients were later diagnosed with an alternative gastrointestinal disease. • Symptoms remained unchanged in 30–50% and progressed in 2–18%. • Improvement occurred in 12–38%. • IBS subtype may change over time, most commonly from diarrhoea-predominant or constipation-predominant to mixed bowel habits. **Likelihood category:** • Stable IBS without alarm features: Very low to low likelihood of acute deterioration. • IBS with severe or unpredictable symptoms: Low to moderate likelihood of impairment affecting duties.
Consequences	**Individual:** Symptoms may cause discomfort, urgency, reduced concentration, or impaired performance. Severe diarrhoea or abdominal pain may limit ability to work safely. **Crew:** May need to take over duties if the individual is incapacitated during symptom flares. **Ship:** Generally minimal, but operational impact may occur if symptoms are severe, unpredictable, or require medical evaluation ashore.
Unmitigated risk	**Individual:** Acceptable in most cases, as IBS does not cause structural disease or life-threatening complications. May be unacceptable if symptoms are severe, unpredictable, or significantly impair performance. **Crew:** Acceptable unless the individual's symptoms cause frequent or prolonged incapacity. **Ship:** Acceptable in most cases; unacceptable if symptoms are severe enough to interfere with safety-critical duties or if toilet access is limited during operations. **Overall**, unmitigated risk depends on symptom severity, predictability, response to treatment, and the operational context.
Mitigation	• Optimised medical management (e.g., dietary modification, antispasmodics, fibre supplementation, antidiarrhoeals, laxatives, psychological therapies). • Confirmation that alarm features have been excluded. • Stable symptom control for a reasonable period before certification. • Restriction of duties if symptoms are unpredictable or severe.

[1324] El-Serag HB, Pilgrim P, Schoenfeld P. Systemic review: Natural history of irritable bowel syndrome. Aliment Pharmacol Ther 2004; 19:861.

	• Time-limited medical certificate during periods of symptom instability or treatment adjustment. • Restriction to near-coastal voyages may be considered in selected cases with fluctuating symptoms
Mitigated risk	**Individual:** Generally acceptable when symptoms are well controlled. Unacceptable if symptoms remain severe or unpredictable despite treatment. **Crew:** Usually acceptable once symptom stability is demonstrated. **Ship:** Acceptable to unacceptable depending on symptom predictability, severity, and the nature of assigned duties.

22.11.4.5 K90 – MALABSORPTION

Reviewed 2026-01-16

Significance	Malabsorption syndromes comprise a heterogeneous group of conditions characterised by impaired absorption of macronutrients and/or micronutrients due to defects in digestion, mucosal uptake, or transport from the intestine. Clinical manifestations may include chronic diarrhoea, steatorrhoea, weight loss, nutritional deficiencies, and metabolic abnormalities. These may lead to fatigue, reduced exercise tolerance, muscle weakness, impaired thermoregulation, and cognitive impairment, all of which can compromise a seafarer's ability to perform routine and emergency duties safely. In severe or uncontrolled cases, malabsorption may result in malnutrition, anaemia, electrolyte disturbances, or bone disease, with potential implications for individual safety, crew safety, and the safe operation of the ship.
Possible medical incident(s)	• Chronic diarrhoea (often >4 weeks) with increased stool frequency, volume, and fluidity. • Steatorrhoea (bulky, greasy stools) and associated urgency or incontinence. • Progressive weight loss and muscle wasting. • Symptomatic micronutrient deficiencies (e.g. iron-deficiency anaemia, vitamin B_{12} or folate deficiency, vitamin D and calcium deficiency) leading to fatigue, dyspnoea, paraesthesias, bone pain, or fractures. • Electrolyte and metabolic disturbances (e.g. hypokalaemia, hypomagnesaemia) with risk of weakness, arrhythmias, or confusion. • Exacerbation of underlying disease (e.g. coeliac disease, pancreatic insufficiency, inflammatory bowel disease) if present.
Likelihood	The likelihood of clinically significant events depends on the underlying cause (e.g. coeliac disease, pancreatic insufficiency, short-bowel syndrome), the severity of malabsorption, and the adequacy of treatment [1325].

[1325] Lenti MV, Hammer HF, Tacheci I, Burgos R, Schneider S, Foteini A, Derovs A, Keller J, Broekaert I, Arvanitakis M, Dumitrascu DL, Segarra-Cantón O, Krznarić Ž, Pokrotnieks J, Nunes G, Hammer J, Pironi L, Sonyi M, Sabo CM, Mendive J, Nicolau A, Dolinsek J, Kyselova D, Laterza L, Gasbarrini A, Surdea-Blaga T, Fonseca J, Lionis C, Corazza GR, Di Sabatino A. European Consensus on Malabsorption-UEG & SIGE, LGA, SPG, SRGH, CGS, ESPCG, EAGEN, ESPEN, and ESPGHAN: Part 2: Screening, Special Populations, Nutritional Goals, Supportive Care, Primary Care Perspective. United European Gastroenterol J. 2025 Jun;13(5):773-797. doi: 10.1002/ueg2.70011. Epub 2025 Mar 15. PMID: 40088199; PMCID: PMC12188380.

	Malabsorption may be global (affecting most nutrients) or partial (affecting specific nutrients), and chronic diarrhoea is a frequent but not universal feature. Untreated or poorly controlled malabsorption is associated with ongoing diarrhoea, progressive weight loss, and cumulative nutritional deficiencies, whereas adequately treated conditions (e.g. strict gluten-free diet in coeliac disease, enzyme replacement in pancreatic insufficiency) may have a much lower likelihood of acute deterioration. **Likelihood category (generic):** • **Well-controlled malabsorption** with stable weight and normal laboratory parameters: Very low to low likelihood of acute deterioration. • **Partially controlled disease** with intermittent diarrhoea or mild deficiencies: Low to moderate likelihood of symptomatic episodes affecting performance. • **Uncontrolled or severe malabsorption** with ongoing diarrhoea, weight loss, or significant deficiencies: Moderate to high likelihood of clinically relevant events
Consequences	**Individual:** Fatigue, reduced stamina, impaired concentration, diarrhoeal urgency, and weakness may limit the ability to perform physically demanding or safety-critical tasks. Severe diarrhoea, dehydration, electrolyte imbalance, or anaemia may necessitate urgent medical care or evacuation. **Crew:** May need to take over duties if the affected seafarer is incapacitated, fatigued, or frequently absent from post due to diarrhoea or weakness. **Ship:** In severe or unstable cases, there may be operational disruption, diversion, MEDEVAC, hospitalisation, repatriation, and crew replacement.
Unmitigated risk	**Individual:** Unacceptable in uncontrolled malabsorption with ongoing weight loss, significant nutritional deficiencies, chronic diarrhoea, or symptomatic anaemia. May be acceptable in well-controlled disease with stable weight, normal laboratory parameters, and no functional impairment. **Crew:** Acceptable unless the individual's condition leads to frequent incapacity, unpredictable absence from duty, or risk of sudden deterioration. **Ship:** Unacceptable if there is a realistic risk of acute decompensation (e.g. severe diarrhoea, dehydration, electrolyte disturbance) requiring urgent intervention at sea. **Overall,** unmitigated risk depends on the underlying diagnosis, severity of malabsorption, stability of weight and laboratory values, and the predictability of symptoms.
Mitigation	• Clear identification of the underlying cause of malabsorption and institution of appropriate specific therapy (e.g. gluten-free diet, pancreatic enzyme replacement, treatment of small-bowel disease). • Correction and stabilisation of nutritional deficiencies (e.g. iron, B-vitamins, fat-soluble vitamins, calcium, trace elements) and documentation of stable weight and laboratory parameters.

	• Optimisation of diarrhoea control and bowel habit to a level compatible with safe performance of duties. • Regular specialists follow-up to monitor disease control and nutritional status. • Limitation of duties or restriction to near-coastal voyages in cases with residual symptoms but low risk of acute decompensation. • Time-limited medical certificate during periods of diagnostic evaluation, treatment initiation, or instability.
Mitigated risk	**Individual:** Generally acceptable when the underlying condition is well controlled, weight and nutritional status are stable, and bowel habits do not interfere with duties. Unacceptable if significant symptoms or deficiencies persist despite optimal therapy. **Crew:** Usually acceptable once stability is documented and the risk of sudden incapacity is low. **Ship:** Acceptable to unacceptable depending on the stability of the condition, predictability of symptoms, and the nature of assigned duties and voyage pattern.
Recommendation	Assessment of a person with malabsorption should include: • A specialist report specifying the underlying diagnosis, extent of malabsorption (global vs partial), and current treatment. • Documentation of weight trend, body mass index, and relevant laboratory parameters (e.g. haemoglobin, ferritin, B_{12}, folate, albumin, electrolytes, vitamin D, calcium). • Description of bowel habit (frequency, urgency, nocturnal symptoms) and its impact on work performance. • Evaluation of any associated conditions (e.g. coeliac disease, pancreatic insufficiency, inflammatory bowel disease) and their stability. • An individualised risk assessment by the seafarer's doctor, taking into account the operational demands of the intended post, voyage pattern, and access to medical care. Where uncertainty remains about long-term stability or risk of decompensation, a conservative approach with time-limited certification and close follow-up is recommended.

22.11.5 ANAL CONDITIONS

K 60, I 84	Anal conditions: Piles (haemorrhoids), fissures, fistulae Likelihood of episode causing pain and limiting activity.	T – If piles prolapsed, bleeding repeatedly or causing symptoms. If fissure or fistula painful, infected, bleeding repeatedly or causing faecal incontinence. P – Consider if not treatable or recurrent	Case-by-case assessment of untreated cases for near coastal duties	When satisfactorily treated

22.11.5.1 K60 – ANAL FISSURES AND FISTULAS

Reviewed 2026-01-16

Significance	Anal fissures and fistulas may significantly impair a seafarer's ability to perform routine and emergency duties due to pain, bleeding, discharge, and difficulty sitting or moving. Primary fissures typically arise from local trauma (e.g. passage of hard stool, prolonged diarrhoea, vaginal delivery, anal intercourse), while secondary fissures may occur in association with underlying disease such as inflammatory bowel disease, granulomatous disease, communicable infections, or malignancy [1326]. Anal fistulas most commonly develop following a perianal abscess, consistent with the cryptoglandular hypothesis [1327]. These conditions may cause persistent pain, infection, or faecal incontinence, all of which may compromise safety at sea.
Possible medical incident(s)	• Severe pain on defecation • Rectal bleeding • Persistent discharge (purulent or faecal) • Recurrent perianal abscess • Local infection or cellulitis • Faecal incontinence in complex fistulas These symptoms may limit mobility, concentration, and the ability to perform safety-critical tasks.
Likelihood	**Anal fissures** • Most primary fissures respond to conservative management and heal within 6–8 weeks, • an additional 20% heal with topical therapy, and • approximately 30% require surgical intervention [1328]. • Anal fissures are common in young to middle-aged adults, with an estimated prevalence of 1 in 350 in the European Union [1329].

[1326] Oh C, Divino CM, Steinhagen RM. Anal fissure. 20-year experience. Dis Colon Rectum. 1995 Apr;38(4):378-82.
[1327] Włodarczyk M, Włodarczyk J, Sobolewska-Włodarczyk A, Trzciński R, Dziki Ł, Fichna J. Current concepts in the pathogenesis of cryptoglandular perianal fistula. J Int Med Res. 2021 Feb;49(2):300060520986669. doi: 10.1177/0300060520986669. PMID: 33595349; PMCID: PMC7894698.
[1328] Collins EE, Lund JN. A review of chronic anal fissure management. Tech Coloproctol. 2007;11:209-223.
[1329] Ayatunde AA, Debrah SA. Current concepts in anal fissures. World J Surgery. 2006;30:2246-60.

	• They occur equally in men and women and are most common in adults aged 15–40 years, though they may also occur in older adults and children [1330]. **Anal fistulas** • Most fistulas arise from a perianal abscess [1331]. • Epidemiological studies report a prevalence of 8–23 per 100,000 people [1332]. • Adult males are approximately twice as likely to develop an abscess or fistula compared with females [1333]. • The mean age at presentation is 40 years (range 20–60 years) [1334] [1335]. The incidence of an anal fistula developing from an anal abscess ranges from 26 – 38% [1336] . **Likelihood category:** **Primary fissure:** Low likelihood of severe complications; moderate likelihood of recurrence. **Fistula:** Moderate to high likelihood of persistent symptoms without surgical treatment.
Consequences	**Individual:** Pain, bleeding, discharge, and difficulty sitting or walking may significantly impair work performance. Infection or abscess formation may require urgent medical treatment or surgical drainage. **Crew:** May need to take over duties if the individual is incapacitated by pain or infection. **Ship:** Potential operational disruption if symptoms worsen, if infection develops, or if MEDEVAC or diversion becomes necessary.
Unmitigated risk	**Individual:** Unacceptable in cases of painful, recurrent, infected, or bleeding fissures or fistulas, or where faecal incontinence is present. May be acceptable in fully healed fissures or asymptomatic minor conditions. **Crew:** Acceptable unless the individual is at risk of sudden incapacity due to pain or infection. **Ship:** Unacceptable if there is a realistic risk of acute deterioration (e.g. abscess formation) requiring urgent intervention at sea. Overall, unmitigated risk depends on symptom severity, recurrence, presence of infection, and the need for surgical treatment.

[1330] Simpson J, Lund JN, Thompson RJ, et al. The use of glyceryl trinitrate (GTN) in the treatment of chronic anal fissure in children. Med Sci Monit. 2003;9:PI123-PI126.
[1331] Włodarczyk M, Włodarczyk J, Sobolewska-Włodarczyk A, Trzciński R, Dziki Ł, Fichna J. Current concepts in the pathogenesis of cryptoglandular perianal fistula. J Int Med Res. 2021 Feb;49(2):300060520986669. doi: 10.1177/0300060520986669. PMID: 33595349; PMCID: PMC7894698.
[1332] Bondurri, A. (2021). Epidemiology of Anal Fistula and Abscess. In: Ratto, C., Parello, A., Litta, F., De Simone, V., Campennì, P. (eds) Anal Fistula and Abscess. Coloproctology. Springer, Cham. https://doi.org/10.1007/978-3-030-30902-2_1-1
1333 Vasilevsky CA, Gordon PH. The incidence of recurrent abscesses or fistula-in-ano following anorectal suppuration. Dis Colon Rectum. 1984;27(2):126.
[1334] Nelson RL, Abcarian H, Davis FG, Persky V. Prevalence of benign anorectal disease in a randomly selected population. Dis Colon Rectum. 1995;38(4):341.
[1335] Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. Ann Chir Gynaecol. 1984;73(4):219.

1336 Scoma JA, Salvati EP, Rubin RJ. Incidence of fistulas subsequent to anal abscesses. Dis Colon Rectum. 1974;17(3):357.

Mitigation	• Conservative management for fissures (e.g. stool softeners, topical vasodilators, analgesia). • Surgical treatment for persistent fissures or all fistulas (e.g. fistulotomy, seton placement). • Confirmation of full healing or stable post-operative status before unrestricted certification. • Restriction of duties or time-limited certification while awaiting surgery or during recovery. • Restriction to near-coastal voyages may be considered for mild, non-infected, minimally symptomatic cases
Mitigated risk	**Individual:** Generally acceptable once healing is complete or symptoms are minimal and stable. Unacceptable if pain, infection, or discharge persists despite treatment. **Crew:** Usually acceptable once the risk of sudden incapacity is low. **Ship**: Acceptable to unacceptable depending on symptom stability, recurrence risk, and operational context.
Recommendation	Patients with anal fistulas typically experience symptoms incompatible with life at sea and with the safe performance of routine and emergency duties. Surgical treatment is usually required before a medical certificate can be granted. A restricted, time-limited certificate may be appropriate while awaiting surgery, depending on symptom severity and operational context. Assessment should include: • Specialist evaluation • Confirmation of diagnosis and treatment plan • Review of symptom severity and functional impact • Individualised risk assessment based on the intended post and voyage pattern.

22.11.5.2 K61 – PERIANAL/ANORECTAL ABSCESS

Reviewed 2026-01-16

Significance	Perianal and anorectal abscesses are acute infections of the anal glands or surrounding tissues. They typically cause significant pain, swelling, and systemic discomfort, and almost always require surgical drainage. During the symptomatic phase, and until the wound has healed, affected individuals may have difficulty sitting, walking, lifting, or performing safety-critical duties. Untreated or inadequately treated abscesses may progress to systemic infection or fistula formation. These conditions may therefore compromise the health and safety of the individual and, in severe cases, necessitate medical evacuation, thereby affecting crew safety and the safe operation of the vessel.
Possible medical incident(s)	• Intermittent or constant rectal pain, often severe, particularly during defecation,

	• Pain when sitting, bending, or performing physical activity, • Local swelling, erythema, and tenderness, • Intermittent or persistent malodorous perianal drainage, • Pruritus, • Fever or systemic symptoms in more advanced cases, and • Progression to perianal fistula [1337].
Likelihood	Adequate surgical drainage usually results in rapid symptom resolution. However, the individual should not be declared fit until the surgical wound has healed and there is no ongoing drainage or infection. • Recurrence of abscess occurs in up to 2% of patients, • but the risk is substantially higher when an associated anal fissure is present, occurring in approximately 37% of cases[1338] [1339]. • A proportion of patients will subsequently develop a fistula, consistent with the cryptoglandular origin of most abscesses [1340].
Consequences	**Individual:** Pain, difficulty sitting or walking, impaired mobility, and reduced ability to perform duties. Risk of systemic infection or fistula formation if untreated. **Crew:** May need to take over duties if the individual is incapacitated or in significant pain. **Ship:** Potential operational disruption if symptoms worsen, if infection develops, or if MEDEVAC or diversion becomes necessary.
Unmitigated risk	**Individual:** Unacceptable while the abscess is active, painful, infected, or draining, or while the surgical wound is unhealed. Acceptable only after full healing and resolution of symptoms. **Crew:** Acceptable only once the risk of sudden incapacity or infection is negligible. **Ship:** Unacceptable if there is any risk of acute deterioration requiring urgent intervention at sea. **Overall,** unmitigated risk is unacceptable until the abscess has been surgically treated, and the wound has fully healed.
Mitigation	• Prompt surgical drainage of the abscess. • Completion of any required antibiotic therapy. • Confirmation of full wound healing and absence of ongoing drainage or infection. • Assessment for underlying pathology (e.g. fissure, Crohn's disease) that may increase recurrence risk.

[1337] Vogel JD, Johnson EK, Morris AM, et al. Clinical Practice Guideline for the Management of Anorectal Abscess, Fistula-in-Ano, and Rectovaginal Fistula. Dis Colon Rectum 2016; 59:1117.
[1338] Hamalainen KP, Sainio AP. Incidence of fistulas after drainage of acute anorectal abscesses. Dis Colon Rectum. 1998;41:1357-1361.
[1339] Vasilevsky CA, Gordon PH. The incidence of recurrent abscesses or fistula-in-ano following anorectal suppuration. Dis Colon Rectum. 1984;27:126-130.
[1340] Włodarczyk M, Włodarczyk J, Sobolewska-Włodarczyk A, Trzciński R, Dziki Ł, Fichna J. Current concepts in the pathogenesis of cryptoglandular perianal fistula. J Int Med Res. 2021 Feb;49(2):300060520986669. doi: 10.1177/0300060520986669. PMID: 33595349; PMCID: PMC7894698.

	• Restriction of duties or time-limited certification while awaiting surgery or during wound healing. • Restriction to near-coastal voyages may be considered only in mild, fully resolving cases
Mitigated risk	**Individual:** Generally acceptable once the abscess has been drained, the wound has healed, and no underlying pathology requiring further treatment is present. Unacceptable if symptoms persist or if there is a high risk of recurrence. **Crew:** Usually acceptable once the risk of sudden incapacity is low. **Ship:** Acceptable to unacceptable depending on wound healing, recurrence risk, and the operational context.
Recommendation	A specialist opinion should be obtained to identify any underlying pathology (e.g. fissure, fistula, inflammatory bowel disease) and to assess the likelihood of recurrence or the need for further treatment during the certificate validity period. The seafarer's doctor should confirm complete wound healing, absence of infection, and full functional recovery before issuing an unrestricted certificate. An individualised risk assessment must be performed, taking into account the operational demands of the intended post and voyage pattern.

22.11.5.3 K64 - HEMORRHOIDS

Significance	Haemorrhoids are vascular cushions in the anal canal that may become symptomatic due to increased venous pressure or local trauma. Risk assessment must consider underlying contributing factors such as chronic diarrhoea, pregnancy, pelvic tumours, prolonged sitting, straining, and chronic constipation [1341]. Symptomatic haemorrhoids may impair a seafarer's ability to perform routine and emergency duties due to pain, bleeding, pruritus, or difficulty sitting or lifting. In some cases, follow-up or surgical intervention may be required during the validity period of the medical certificate. It is also essential to exclude more serious differential diagnoses, including colorectal malignancy, inflammatory bowel disease, and anal fissures.
Possible medical incident(s)	• Rectal bleeding (bright red blood per rectum) • Pain, particularly with thrombosed external haemorrhoids • Perianal pruritus • Faecal soiling or mucous discharge • Prolapse of internal haemorrhoids
Likelihood	**Internal hemorrhoids** are graded according to the degree to which they prolapse from the anal canal.

[1341] Lohsiriwat V. Hemorrhoids: from basic pathophysiology to clinical management. World J Gastroenterol. 2012 May 7;18(17):2009-17. doi: 10.3748/wjg.v18.i17.2009. PMID: 22563187; PMCID: PMC3342598.

	• **Grade I hemorrhoids** are visualized on anoscopy and may bulge into the lumen but do not prolapse below the dentate line. • **Grade II hemorrhoids** prolapse out of the anal canal with defecation or with straining but reduce spontaneously. • **Grade III hemorrhoids** prolapse out of the anal canal with defecation or straining and require manual reduction. • **Grade IV hemorrhoids** are irreducible and may strangulate. **External hemorrhoids:** External hemorrhoids are distal to or below the dentate line (figure 1), where tissues are innervated by spinal nerves, and therefore, are more sensitive to pain and irritation. External hemorrhoids arise from the inferior hemorrhoidal plexus. They are covered by modified squamous epithelium (anoderm), which contains numerous somatic pain receptors, making external hemorrhoids extremely painful when thrombosed. **Mixed internal and external hemorrhoids** — Mixed internal and external hemorrhoids straddle the dentate line Approximately 40% of individuals are **asymptomatic**[1342]. **Likelihood category:** • **Asymptomatic or mild haemorrhoids:** Very low to low likelihood of acute deterioration. • **Recurrent or thrombosed haemorrhoids:** Low to moderate likelihood of impairment. • **Severe prolapse or persistent bleeding:** Moderate likelihood of requiring intervention.
Consequences	**Individual:** Pain, bleeding, pruritus, and discomfort when sitting or lifting may impair work performance. Thrombosis or prolapse may cause acute incapacitation. **Crew:** May need to take over duties if the individual is incapacitated by pain or bleeding. **Ship:** Usually minimal, but operational disruption may occur if acute thrombosis, severe bleeding, or need for urgent medical review arises.
Unmitigated risk	**Individual:** Acceptable in asymptomatic or mild cases. Unacceptable in cases with recurrent bleeding, thrombosis, severe pain, or prolapse requiring urgent treatment. **Crew:** Acceptable unless symptoms cause frequent or unpredictable incapacity. **Ship**: Acceptable in most cases; unacceptable if there is a realistic risk of acute thrombosis or severe bleeding requiring urgent intervention at sea. **Overall,** unmitigated risk depends on symptom severity, recurrence, and the likelihood of acute exacerbation.

[1342] Riss S, Weiser FA, Schwameis K, et al. The prevalence of hemorrhoids in adults. Int J Colorectal Dis 2012; 27:215.

Mitigation	• Optimised conservative management (e.g. dietary fibre, stool softeners, topical treatments, avoidance of straining). • Treatment of underlying risk factors (e.g. constipation, diarrhoea). • Surgical or procedural intervention when indicated (e.g. rubber band ligation, excision of thrombosed haemorrhoids). • Confirmation of symptom stability before unrestricted certification. • Restriction of duties or time-limited certification during periods of active symptoms or while awaiting treatment. • Restriction to near-coastal voyages may be considered in selected cases with mild but recurrent symptoms
Mitigated risk	**Individual:** Generally acceptable once symptoms are controlled and no acute exacerbation is expected. Unacceptable if symptoms persist despite treatment or if recurrent thrombosis or bleeding is likely. **Crew:** Usually acceptable once the risk of sudden incapacity is low. **Ship:** Acceptable to unacceptable depending on symptom stability, recurrence risk, and operational context.
Recommendation	Assessment should include: • Evaluation of symptom severity and frequency • Identification of underlying risk factors • Exclusion of more serious differential diagnoses • Review of current treatment and response • Consideration of the need for follow-up or surgical intervention during the certificate period An individualised risk assessment must be performed, taking into account the operational demands of the intended post and voyage pattern.

22.11.6 CIRRHOSIS OF THE LIVER

K 70, 72	Cirrhosis of the liver Liver failure. Bleeding oesophageal varices.	T – Until satisfactorily investigated P – If severe or complicated with ascites or oesophageal varices	R, L – Case-by-case specialist assessment	Not applicable

22.11.6.1 K70-74 - CIRRHOSIS OF THE LIVER

Reviewed 2026-01-19

Significance	Cirrhosis of the liver is a progressive condition characterised by fibrosis, architectural distortion, and impaired hepatic function. While compensated cirrhosis may remain clinically stable for prolonged periods, the transition to decompensation is associated with life-threatening complications, reduced physiological reserve, and unpredictable deterioration. Acute liver failure represents a distinct but related syndrome with rapid onset and high short-term mortality.

	Both compensated and decompensated cirrhosis may impair a seafarer's capacity to perform safety-critical duties due to risks of haemorrhage, encephalopathy, infection, fluid imbalance, and metabolic instability. These conditions may compromise alertness, psychomotor performance, haemodynamic stability, and the ability to respond effectively in emergencies.
Possible medical incident(s)	Major complications of cirrhosis that may lead to acute incapacity include: • Variceal haemorrhage • Ascites • Spontaneous bacterial peritonitis • Hepatic encephalopathy • Hepatocellular carcinoma • Hepatorenal syndrome • Hepatopulmonary syndrome • Acute liver failure Additional complications such as portal vein thrombosis and cirrhotic cardiomyopathy may occur, although these alone do not define decompensated cirrhosis.
Likelihood	**Cirrhosis (Compensated and Decompensated)** • Ten-year survival for compensated cirrhosis: ~90%, and • likelihood of progression to decompensation within 10 years: ~50% [1343]. • Median survival after decompensation: ~2 years [Reference needed]. Disease progression is influenced by bleeding, infection, alcohol intake, medication effects, dehydration, constipation, obesity, and the natural history of the underlying liver disease [1344] [1345] [1346] [1347]. Mortality related to clinical stages [1348]: • Stage 1: No varices or ascites – mortality ~1% per year. • Stage 2: Varices without bleeding or ascites – mortality ~4% per year. • Stage 3: Ascites (with or without varices) – mortality ~20% per year. • Stage 4: Gastrointestinal bleeding due to portal hypertension – 57% **Oesophageal Varices** Oesophageal varices develop as a consequence of portal hypertension. Approximately 50% of individuals with cirrhosis have varices at diagnosis [1349].

[1343] D'Amico G, Garcia-Tsao G, Pagliaro L. Natural history and prognostic indicators of survival in cirrhosis: a systematic review of 118 studies. J Hepatol. 2006;44:217-231.
[1344] Liao WC, Hou MC, Chang CJ, Lee FY, Lin HC, Lee SD. Potential precipitating factors of esophageal variceal bleeding: a case-control study. Am J Gastroenterol. 2011;106(1):96.
[1345] Mumtaz K, Ahmed US, Abid S, Baig N, Hamid S, Jafri W. Precipitating factors and the outcome of hepatic encephalopathy in liver cirrhosis. J Coll Physicians Surg Pak. 2010;20(8):514.
[1346] Sundaram V, Shaikh OS. Hepatic encephalopathy: pathophysiology and emerging therapies. Med Clin North Am. 2009;93(4):819.
[1347] Berzigotti A, Garcia-Tsao G, Bosch J, Grace ND, Burroughs AK. Obesity is an independent risk factor for clinical decompensation in patients with cirrhosis. Hepatology. 2011;54(2):555.
[1348] D'Amico G, Garcia-Tsao G, Pagliaro L. Natural history and prognostic indicators of survival in cirrhosis: A systematic review of 118 studies. Journal of. Hepatology 44 (2006) 217–231.
[1349] Duah A, Nkrumah KN, Tachi K. Oesophageal varices in patients with liver cirrhosis attending a major tertiary hospital in Ghana. Pan Afr Med J. 2018 Dec 13;31:230. doi: 10.11604/pamj.2018.31.230.16657. PMID: 31447987; PMCID: PMC6691363.

- Annual bleeding risk: 5% for small varices; 15% for large varices [1350].
- Variceal development and growth: ~7% per year [1351]
- Predictors of bleeding include decompensated cirrhosis and red wale marks on endoscopy [1352].

Variceal haemorrhage is a medical emergency with a 6-week mortality of ~10% and a 1-year recurrence rate of ~60% without prophylaxis [1353] [1354].

The follow up recommendations for patients with oesophageal varices depend on the size of the varices and whether or not they have bled [1355][1356].

- Patients with cirrhosis and no varices should have surveillance endoscopy every 2 to 3 years, or yearly if they develop decompensated cirrhosis.
- Patients who have cirrhosis and small varices should have repeat endoscopy every 1 to 2 years.
- Patients on beta-blocker treatment for prevention of variceal bleeding do not need surveillance endoscopy.
- Endoscopic surveillance schedule after variceal eradication by banding ligation is 3 months, then after 6 months, and then yearly.

The 6-week mortality for variceal bleeding is approximately 10% and the 1-year recurrence rate of bleeding is 60% if no preventative treatment is given[1357].

Overall prognosis depends on the aetiology of the underlying portal hypertension and on the status of the liver function.

Patients with oesophageal variceal bleeding have an overall 1-year mortality of 30% - 40% whilst patients with varices but no bleeding or ascites have a mortality rate of 3.4% per year[1358].

Acute Liver Failure (ALF)

ALF is characterised by rapid hepatic deterioration (typically <26 weeks) with jaundice, coagulopathy, and encephalopathy in individuals without prior liver disease.

- Mortality without liver transplantation is 45%; 25% of cases received a transplant and the overall mortality is 30% [1359].

[1350] North Italian Endoscopic Club for the Study and Treatment of Esophageal Varices. Prediction of the first variceal hemorrhage in patients with cirrhosis of the liver and esophageal varices. A prospective multicenter study. N Engl J Med. 1988;319:983-989.
[1351] Satapathy SK, Sanyal AJ. Nonendoscopic management strategies for acute esophagogastric variceal bleeding. Gastroenterol Clin North Am. 2014 Dec;43(4):819-33. doi: 10.1016/j.gtc.2014.08.011. Epub 2014 Sep 27. PMID: 25440928; PMCID: PMC4255471.
[1352] Garcia-Tsao G, Sanyal AJ, Grace ND, et al. Prevention and management of gastroesophageal varices and variceal hemorrhage in cirrhosis. Hepatology. 2007;46:922-938.
[1353] Xu X, Tang C, Linghu E, Ding H; Chinese Society of Hepatology, Chinese Medical Association; Chinese Society of Gastroenterology, Chinese Medical Association; Chinese Society of Digestive Endoscopy, Chinese Medical Association. Guidelines for the Management of Esophagogastric Variceal Bleeding in Cirrhotic Portal Hypertension. J Clin Transl Hepatol. 2023 Dec 28;11(7):1565-1579. doi: 10.14218/JCTH.2023.00061. Epub 2023 Oct 17. PMID: 38161497; PMCID: PMC10752807.
[1354] Lesmana, C.R.A., Shukla, A., Kumar, A. et al. Management of acute variceal bleeding: updated APASL guidelines. Hepatol Int 19, 1003–1031 (2025). https://doi.org/10.1007/s12072-025-10894-4
[1355] de Franchis R; Baveno V Faculty. Revising consensus in portal hypertension: report of the Baveno V consensus workshop on methodology of diagnosis and therapy in portal hypertension. J Hepatol. 2010;53:762-768.
[1356] Tripathi D, Stanley AJ, Hayes PC, et al. UK guidelines on the management of variceal haemorrhage in cirrhotic patients. Gut. 2015;64:1680-1704.
[1357] Garcia-Tsao G, Bosch J. Management of varices and variceal hemorrhage in cirrhosis. N Engl J Med. 2010;362:823-832.
[1358] D'Amico G, Garcia-Tsao G, Pagliaro L. Natural history and prognostic indicators of survival in cirrhosis: a systematic review of 118 studies. J Hepatol. 2006;44:217-231.
[1359] Lee WM, Squires RH Jr, Nyberg SL, et al. Acute liver failure: summary of a workshop. Hepatology. 2008;47:1401-1415.

	• Survival rates without liver transplant vary by etiology and center, but generally range from 10% to 40%, with some centers reporting up to 45% mortality without transplantation [1360]. • 1-year survival for ALF including those undergoing liver transplantation ranges from 60% to 75%. This implies overall mortality around 25-40% [1361]. • One-year post-transplant survival: 73–82% in recent US data; other studies report 87% at 1 year and 78% at 3 years [Reference needed].
Consequences	**Individual** • Sudden haemorrhage, encephalopathy, infection, or renal failure may cause collapse, confusion, impaired judgement, or inability to perform duties. • Increased risk of rapid deterioration requiring urgent medical evacuation. • Vulnerability to dehydration, infection, and medication side-effects in maritime environments. **Crew** • Reduced ability of the affected seafarer to participate in emergency response. • Potential for errors in safety-critical tasks due to encephalopathy or fatigue. • Increased burden on crew if medical evacuation or additional monitoring is required. **Ship** • Risk of operational disruption due to medical emergencies at sea. • Potential diversion, delay, or need for unscheduled port calls. • Compromised safety during navigation, engine-room operations, or emergency drills.
Unmitigated risk	If no mitigating measures are in place (e.g., loss of medication, lack of follow-up, or sudden deterioration), the unmitigated risk is: **Individual:** Unacceptable **Crew:** Unacceptable **Ship:** Unacceptable **Overall unmitigated risk:** Unacceptable.
Mitigation	Mitigating measures may include: • Comprehensive specialist hepatology assessment documenting disease stage, stability, and prognosis. • Demonstrated stability of compensated cirrhosis with no history of decompensation. • Abstinence from alcohol where relevant, with evidence of compliance. • Regular monitoring (every 6–12 months) with liver function tests, ultrasound, and endoscopy as indicated.

[1360] Pathikonda M, Munoz S J. Acute Liver Failure. Annals of Hepatology, 2010; 9(1): 7-14.
[1361] Karvellas CJ, Leventhal TM, Rakela JL, Zhang J, Durkalski V, Reddy KR, Fontana RJ, Stravitz RT, Lake JR, Lee WM, Parekh JR. Outcomes of patients with acute liver failure listed for liver transplantation: A multicenter prospective cohort analysis. Liver Transpl. 2023 Mar 1;29(3):318-330. doi: 10.1002/lt.26563. Epub 2022 Sep 14. PMID: 35980605; PMCID: PMC10662679.

	• Effective prophylaxis for variceal bleeding (e.g., non-selective beta-blockers). • Demonstrated adherence to treatment and follow-up. • Restrictions on duties or sailing area (e.g., exclusion from remote voyages). • Time-limited certificates to ensure ongoing review.
Mitigated risk	**Compensated cirrhosis without complications** Where the seafarer has stable compensated cirrhosis, no history of decompensation, and reliable access to follow-up: • Individual: May be reduced to acceptable. • Crew: May be reduced to acceptable with duty restrictions. • Ship/Operations: May be reduced to acceptable if safety-critical duties are limited. **Decompensated cirrhosis or acute liver failure** Where there is any history of decompensation, recurrent variceal bleeding, hepatic encephalopathy, or acute liver failure: • Risk remains unacceptable, even with mitigation.
Recommendation	Any applicant with suspected or confirmed liver disease must undergo specialist evaluation including: • Diagnosis and staging of liver disease • Assessment of complications • Prognostic scoring (e.g., Child-Pugh, MELD) • Estimated likelihood of decompensation or acute events during the certificate period • Recommendations for monitoring, treatment, and follow-up Only with this information an individualised, defensible risk assessment can be completed.

22.11.7 BILIARY TRACT DISEASE

K 80-83	Biliary tract disease Likelihood of biliary colic from gallstones, cirrhosis of liver, liver failure	T – Biliary colic until definitely treated P – Advanced liver disease, recurrent or persistent impairing symptoms	R, L – Case-by-case specialist assessment. Does not meet requirements for unlimited medical certificate. Sudden onset of biliary colic unlikely.	Case-by-case specialist assessment. Very low likelihood of recurrence or worsening in next two years.

22.11.7.1 K80 - GALLSTONES

Reviewed 2026-01-19

Significance	Gallstones are common, particularly in Western populations, with a prevalence of approximately 10–15% in adults [1362]. Risk factors include increasing age, obesity, female sex hormones, and certain metabolic conditions [1363]. Around 90% of gallstones are cholesterol stones formed within the gallbladder[1364] . Most individuals with gallstones remain asymptomatic. However, biliary colic and complications such as cholecystitis, cholangitis, or pancreatitis may occur unpredictably. These events can cause sudden, severe abdominal pain, fever, sepsis, or jaundice, any of which may impair a seafarer's ability to perform duties safely.
Possible medical incident(s)	• Recurrent biliary colic • Acute cholecystitis • Cholangitis • Septicaemia • (Less commonly) acute pancreatitis These conditions may arise suddenly and may require urgent medical assessment or surgical intervention.
Likelihood	Although gallstones are common, more than 80% of affected individuals remain asymptomatic [1365] [1366]. • Annual incidence of biliary pain in previously asymptomatic individuals: 1–2% per year [1367]. • More than 60% of patients with a history of biliary colic experience recurrent pain within 2 years after the initial attack [1368].

[1362] Stinton LM, Shaffer EA. Epidemiology of gallbladder disease: cholelithiasis and cancer. Gut Liver. 2012;6:172-187.
[1363] Sun H, Tang H, Jiang S, et al. Gender and metabolic differences of gallstone diseases. World J Gastroenterol. 2009;15:1886-1891.
[1364] Diehl AK. Epidemiology and natural history of gallstone disease. Gastroenterol Clin North Am. 1991;20:1-19
[1365] Freidman GD, Raviola CA, Fireman B. Prognosis of gallstones with mild or no symptoms: 25 years of follow-up in a health maintenance organization. J Clin Epidemiol. 1989;42:127-136.
[1366] Gracie WA, Ransohoff DF. The natural history of silent gallstones: the innocent gallstone is not a myth. N Engl J Med. 1982;307:798-800.
[1367] Behari A, Kapoor VK. Asymptomatic Gallstones (AsGS) - To Treat or Not to? Indian J Surg. 2012 Feb;74(1):4-12. doi: 10.1007/s12262-011-0376-5. Epub 2011 Dec 3. PMID: 23372301; PMCID: PMC3259178.
[1368] Velamazán R, López-Guillén P, Martínez-Domínguez SJ, Abad Baroja D, Oyón D, Arnau A, Ruiz-Belmonte LM, Tejedor-Tejada J, Zapater R, Martín-Vicente N, Fernández-Esparcia PJ, Julián Gomara AB, Sastre Lozano V, Manzanares García JJ, Chivato Martín-Falquina I, Andrés Pascual L, Torres Monclus N, Zaragoza Velasco N, Rojo E, Lapeña-Muñoz B, Flores V, Díaz Gómez A, Cañamares-Orbís P, Vinzo Abizanda I, Marcos Carrasco N, Pardo Grau L, García-Rayado G, Millastre Bocos J, Garcia Garcia de Paredes A, Vaamonde Lorenzo M, Izagirre Arostegi A, Lozada-Hernández EE, Velarde-Ruiz Velasco JA, de-Madaria E. Symptomatic gallstone disease: Recurrence patterns and risk factors for relapse after first admission, the RELAPSTONE study. United European Gastroenterol J. 2024 Apr;12(3):286-298. doi: 10.1002/ueg2.12544. Epub 2024 Feb 20. PMID: 38376888; PMCID: PMC11017764.

	• It is well established that individuals who have had biliary colic are at increased risk of recurrent pain and gallstone-related complications [1369]. • Major complications (acute cholecystitis, cholangitis, acute pancreatitis) occur at an annual rate of 0.1–0.3% among asymptomatic individuals [1370] [1371].
Consequences	**Individual** • Sudden onset of severe abdominal pain may cause incapacitation. • Risk of fever, jaundice, vomiting, or sepsis. • Potential need for urgent surgical intervention. • Increased vulnerability during remote voyages with limited medical access. **Crew** • Reduced ability of the affected seafarer to participate in emergency duties. • Increased burden on crew if acute illness occurs at sea. **Ship** • Risk of operational disruption due to acute medical events. • Possible need for diversion or unscheduled port calls. • Impaired safety during navigation or technical operations if the affected individual holds a safety-critical role.
Unmitigated risk	Without mitigating measures (e.g., if symptoms recur unexpectedly or if the seafarer loses access to analgesia or follow-up): **Individual:** Unacceptable if symptomatic; acceptable if asymptomatic with no prior biliary colic. **Crew:** Unacceptable if the seafarer has recurrent symptoms; acceptable if asymptomatic. **Ship:** Unacceptable for symptomatic or recurrent disease; acceptable for asymptomatic disease. **Overall unmitigated risk:** Asymptomatic gallstones: Acceptable. Symptomatic or recurrent gallstone disease: Unacceptable.
Mitigation	**For symptomatic gallstones:** • Definitive treatment of symptomatic gallstones by laparoscopic cholecystectomy. • Adequate postoperative recovery before return to duty. • Specialist hepatobiliary assessment confirming stability and low risk of recurrence. • Imaging (e.g., ultrasound) confirming absence of complications. • Avoidance of remote or long-duration voyages for a defined period after treatment.

[1369] Hapca S, Ramsay G, Murchie P, Ahmed I. Biliary Colic. BMJ 2021;374:n2085. doi: https://doi.org/10.1136/bmj.n2085
[1370] Friedman GD. Natural history of asymptomatic and symptomatic gallstones. Am J Surg. 1993;165:399-404
[1371] https://bestpractice.bmj.com/topics/en-gb/873.

	• Time-limited medical certificates to ensure follow-up. **For asymptomatic gallstones:** • Specialist input regarding risk of complications. • Consideration of elective cholecystectomy if risk of gallbladder carcinoma is elevated (e.g., stones >3 cm, porcelain gallbladder)
Mitigated risk	**Asymptomatic gallstones** With appropriate assessment and no history of biliary colic: • Individual: Acceptable. • Crew: Acceptable. • Ship/Operations: Acceptable. A time-limited certificate may be appropriate, with specialist confirmation of very low likelihood of recurrence or worsening within the next two years. Symptomatic gallstones (post-treatment). After successful cholecystectomy and full recovery: • Individual: Acceptable. • Crew: Acceptable. • Ship/Operations: Acceptable. **Recurrent biliary colic or complications** • Risk may remain unacceptable, even with mitigation, depending on frequency and severity.

Recommendation	• Symptomatic gallstones require surgical cholecystectomy, followed by adequate recovery before fitness can be reassessed.
	• Asymptomatic gallstones generally do not require treatment; however, an individualised risk assessment with specialist hepatobiliary input is essential.
	• Particular attention should be given to:
	  ○ History of biliary colic
	  ○ Stone size (>3 cm)
	  ○ Gallbladder wall calcification (“porcelain gallbladder”)
	  ○ Risk of gallbladder carcinoma [Reference needed]
	• A specialist report should outline the likelihood of recurrence or complications during the certificate validity period.
	•

22.11.7.2 K85-86 - PANCREATITIS

K 85-86	Pancreatitis Likelihood of recurrence	T – Until resolved P – If recurrent or alcohol related, unless confirmed abstention. See alcohol abuse.	Case-by-case assessment based on specialist reports.	Case-by-case assessment based on specialist reports. Very low likelihood of recurrence.

Reviewed 2026-01-19

Significance	Acute pancreatitis is an inflammatory condition of the pancreas that may range from mild, self-limiting disease to severe, life-threatening illness with multi-organ failure. Mild cases typically resolve within a few days with conservative treatment, but moderate to severe cases may require hospitalisation, intensive care, or emergency intervention. During an acute episode, the seafarer is unable to work and may require urgent medical evacuation. Pancreatitis carries a recognised risk of recurrence, particularly when the underlying cause is not addressed. Alcohol-related pancreatitis is associated with a significantly higher recurrence rate unless abstinence is maintained. Chronic pancreatitis may develop following recurrent episodes and is associated with persistent pain, malabsorption, and long-term disability.
Possible medical incident(s)	• Recurrent episodes • Recurrent acute pancreatitis • Progression to chronic pancreatitis • Local complications • Acute peripancreatic fluid collections • Pancreatic pseudocyst • Walled-off necrosis • Pancreatic necrosis [Reference needed] • Systemic complications • Exacerbation of underlying comorbidities (e.g., coronary artery disease, chronic lung disease) • Acute respiratory failure • Shock • Acute kidney injury • Sepsis These complications may arise suddenly and may require urgent medical intervention.
Likelihood	Approximately 85% of patients with acute pancreatitis have acute interstitial oedematous pancreatitis, characterised by pancreatic enlargement due to inflammatory oedema [1372] . Approximately 15% have necrotising pancreatitis, involving necrosis of pancreatic or peripancreatic tissue [1373].

[1372] Banks PA, Freeman ML, Practice Parameters Committee of the American College of Gastroenterology. Practice guidelines in acute pancreatitis. Am J Gastroenterol 2006; 101:2379.
[1373] Banks PA, Bollen TL, Dervenis C, et al. Classification of acute pancreatitis - 2012: revisions of the Atlanta classification and definitions by international consensus. Gut 2013; 62:102.

	• Most patients experience mild disease and recover within 3–5 days without complications, • 20% develop moderately severe or severe pancreatitis, with local or systemic complications or organ failure, and • overall mortality is approximately 5%, with mortality of 3% in interstitial pancreatitis and 17% in necrotising pancreatitis [1374]. **Recurrence and chronicity:** A study of 8,492 patients with acute pancreatitis revealed [1375]: • Pooled prevalence of recurrent acute pancreatitis: 22% • Pooled prevalence of chronic pancreatitis: 10% • Among those with recurrent acute pancreatitis, chronic pancreatitis developed in 10–36%. **Likelihood categories** • Single mild episode with identified and treated cause: Low. • Alcohol-related pancreatitis without confirmed abstinence: High. • Recurrent pancreatitis: Moderate to high. • Necrotising pancreatitis: Moderate, with high risk of complications.
Consequences	**Individual:** • Severe abdominal pain, vomiting, fever, and inability to work. • Risk of organ failure, sepsis, or shock. • Potential need for urgent medical evacuation and hospitalisation. • Risk of recurrence, especially if the underlying cause persists. **Crew:** • Redistribution of duties to cover the incapacitated seafarer. • Increased burden during medical emergencies. • Risks associated with assisting in medevac operations. **Ship:** • Operational disruption due to acute illness at sea. • Possible diversion or unscheduled port call. • Increased workload on remaining crew, affecting safety and efficiency
Unmitigated risk	**Individual:** Unacceptable – due to risk of recurrence, complications, or organ failure. **Crew:** Unacceptable – sudden incapacitation may compromise safety-critical operations. **Ship:** Unacceptable – risk of diversion, medevac, and operational disruption. **Overall unmitigated risk:** Unacceptable.

[1374] Banks PA, Freeman ML, Practice Parameters Committee of the American College of Gastroenterology. Practice guidelines in acute pancreatitis. Am J Gastroenterol 2006; 101:2379.
[1375] Sankaran SJ, Xiao AY, Wu LM, et al. Frequency of progression from acute to chronic pancreatitis and risk factors: a meta-analysis. Gastroenterology 2015; 149:1490.

Mitigation	Mitigating measures may include: • Identification and treatment of the underlying cause (e.g., gallstones, hypertriglyceridaemia, medication-related causes). • Confirmed abstinence from alcohol where relevant, supported by specialist documentation. • Completion of required interventions (e.g., cholecystectomy for gallstone-related pancreatitis). • Specialist gastroenterology assessment detailing severity, prognosis, and recurrence risk. • Regular follow-up and adherence to lifestyle and medical advice. • Restrictions on sailing area or duties where appropriate. • Time-limited medical certificates to ensure ongoing monitoring
Mitigated risk	**After a single mild episode with resolved cause** • Individual: Acceptable. • Crew: Acceptable. • Ship/Operations: Acceptable. • A time-limited certificate may be appropriate. **Alcohol-related pancreatitis with confirmed abstinence** • Individual: May be acceptable with specialist confirmation. • Crew: Usually acceptable. • Ship/Operations: Acceptable with restrictions if needed. **Recurrent or severe pancreatitis** • Risk may remain unacceptable, depending on recurrence risk and residual impairment.
Recommendation	Any assessment of a seafarer who has experienced acute pancreatitis must include: • A specialist report detailing aetiology, severity, treatment, and prognosis. • Confirmation of lifestyle advice given (e.g., alcohol abstinence, dietary modification). • An estimate of recurrence risk with and without adherence to recommendations. • Documentation of any further required treatment (e.g., cholecystectomy). • A clear statement on the likelihood of recurrence during the certificate validity period.

22.11.8 STOMA

Y 83	Stoma (ileostomy, colostomy) Impairment if control is lost – need for bags, etc. Potential problems during prolonged emergency	T – Until stabilised P – Poorly controlled	R – Case-by-case assessment	Case-by-case specialist assessment.

22.11.8.1 Y83, Z93 - STOMA (ILEOSTOMY, COLOSTOMY)

Reviewed 2026-01-20

Significance	A stoma (ileostomy or colostomy) is a surgically created opening that diverts bowel contents to an external appliance. The anatomical location and type of stoma significantly influence management requirements. Loop colostomies are generally larger and more difficult to manage than end colostomies. Output volume and consistency depend on the stoma's position relative to the ileocaecal valve: • Ileostomies, caecostomies, and ascending colostomies typically produce >500 ml of liquid effluent per 24 hours, containing digestive enzymes that may irritate the skin, and • Descending and sigmoid colostomies produce formed stool without digestive enzymes [1376]. Ileostomy patients are particularly vulnerable to fluid and electrolyte loss, especially during periods of high output, heavy perspiration, or hot environments. They may also experience malabsorption of minerals and vitamins and may not adequately absorb time-released or enteric-coated medications [1377]. Loss of control over stoma output, pouch leakage, or equipment failure may impair a seafarer's ability to perform duties safely, particularly during prolonged emergencies or in hot, humid, or physically demanding environments.
Possible medical incident(s)	• Leakage or loss of pouch adhesion • Skin irritation or breakdown • Dehydration (particularly in ileostomy patients) • Parastomal hernia • Stomal prolapse • Stoma stenosis • Small bowel obstruction • Food blockage • Need for urgent medical attention due to high-output stoma or complications

[1376] Colwell J. Principles of stoma management. In: Colwell, J, Goldberg, M, Carmel, J, Fecal and Urinary Diversions: Management Principles (Ed), Mosby, St. Louis 2004. p.240.
[1377] Berger V, Reeh M, Scherer M, Härterich S, Möller S, Wansing EA, van der Linde A, Langebrake C. Enhancing drug therapy in ostomy patients: Best practice recommendations for medication management. PLoS One. 2024 Jun 6;19(6):e0305047. doi: 10.1371/journal.pone.0305047. PMID: 38843261; PMCID: PMC11156294.

	Environmental factors may exacerbate risks. Extreme temperatures (e.g., engine room work, tropical climates) may impair pouch adhesion. Contact sports or heavy mechanical work may damage the stoma.
Likelihood	Stomal complications are common, with reported incidence ranging from 14–79% depending on stoma type and follow-up duration [1378] [1379]. Complications may occur early (within 30 days) or many years after surgery [1380] [1381] [1382]. **Early complications** [1383] [1384]. • Often related to surgical technique: • Stomal necrosis • Stomal bleeding • Stoma retraction • Mucocutaneous separation **Late complications** [1385] [1386]**.** • Parastomal hernia • Stomal prolapse • Stoma stenosis **Ileostomy-specific risks** • Dehydration affects up to 30% of patients after loop ileostomy creation and is the most common cause of hospital readmission [1387] [1388]. • High-output ileostomies may require frequent skin barrier replacement, intravenous fluids, or stoma reversal [1389]. • Drug malabsorption and food blockage may occur [1390]. • Loop ileostomies have the highest complication rates [1391] **Risk factors for complications include [1392]:** • Suboptimal stoma site

[1378] Arumugam PJ, Bevan L, Macdonald L, Watkins AJ, Morgan AR, Beynon J, Carr ND; A prospective audit of stomas--analysis of risk factors and complications and their management. Colorectal Dis. 2003;5(1):49.
[1379] Robertson I, Leung E, Hughes D, Spiers M, Donnelly L, Mackenzie I, Macdonald A; Prospective analysis of stoma-related complications. Colorectal Dis. 2005;7(3):279.
[1380] Shabbir J, Britton DC. Stoma complications: a literature overview. Colorectal Dis 2010; 12:958.
[1381] Persson E, Berndtsson I, Carlsson E, et al. Stoma-related complications and stoma size - a 2-year follow up. Colorectal Dis 2010; 12:971.
[1382] Cottam J, Richards K, Hasted A, Blackman A. Results of a nationwide prospective audit of stoma complications within 3 weeks of surgery. Colorectal Dis 2007; 9:834.
[1383] Persson E, Berndtsson I, Carlsson E, Hallén AM, Lindholm E; Stoma-related complications and stoma size - a 2-year follow up. Colorectal Dis. 2010;12(10):971.
[1384] Cottam J, Richards K, Hasted A, Blackman A; Results of a nationwide prospective audit of stoma complications within 3 weeks of surgery. Colorectal Dis. 2007;9(9):834.
[1385] Shabbir J, Britton DC; Stoma complications: a literature overview. Colorectal Dis. 2010;12(10):958.
[1386] Robertson I, Leung E, Hughes D, Spiers M, Donnelly L, Mackenzie I, Macdonald A; Prospective analysis of stoma-related complications. Colorectal Dis. 2005;7(3):279.
[1387] Messaris E, Sehgal R, Deiling S, et al. Dehydration is the most common indication for readmission after diverting ileostomy creation. Dis Colon Rectum 2012; 55:175.
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[1391] Feinberg SM, McLeod RS, Cohen Z. Complications of loop ileostomy. Am J Surg. 1987 Jan;153(1):102-7. doi: 10.1016/0002-9610(87)90209-1. PMID: 3799885.
[1392] Cottam J, Richards K, Hasted A, Blackman A; Results of a nationwide prospective audit of stoma complications within 3 weeks of surgery. Colorectal Dis. 2007;9(9):834.

	• Stoma height <10 mm • Obesity • Crohn's disease or other inflammatory bowel disease • Diabetes • Tobacco use • Comorbid medical illness **Likelihood categories:** • Well-healed, stable stoma: Low. • Ileostomy with high output or prior complications: Moderate to high. • Poorly controlled stoma: High.
Consequences	**Individual:** • Skin irritation, leakage, or pouch failure may impair ability to work. • Dehydration or electrolyte imbalance may cause fatigue, dizziness, or collapse. • Heavy mechanical work may damage the stoma or appliance. • Risk of obstruction or hernia requiring urgent medical care. **Crew:** • Usually minimal impact unless complications occur. • May need to assist in medical care or emergency evacuation. **Ship:** • Generally minimal impact unless acute complications arise. • Potential operational disruption if medical evacuation or diversion is required.
Unmitigated risk	**Individual:** • Unacceptable for poorly controlled stoma; • acceptable for stable, well-managed stoma. **Crew:** • Usually acceptable unless complications occur. **Ship:** • Acceptable to unacceptable depending on risk of acute complications. **Overall unmitigated risk:** • Stable, well-controlled stoma: Acceptable. • Poorly controlled or high-risk stoma: Unacceptable.

Mitigation	• Comprehensive education in stoma care and pouch management.
	• Ensuring adequate supplies of pouches, skin barriers, and accessories for the entire contract period.
	• Maintaining hydration, particularly for ileostomy patients.
	  ○ US National Academies recommend ~3 litres/day for men and ~2.2 litres/day for women[1393]
	  ○ Dietitians of Canada recommend similar intake [1394]

[1393] http://www.nationalacademies.org/hmd/Reports/2004/Dietary-Reference-Intakes-Water-Potassium-Sodium-Chloride-and-Sulfate.aspx (Accessed on May 13, 2019).
[1394] https://www.dietitians.ca/getattachment/becace49-3bad-4754-ac94-f31c3f04fed0/FACTSHEET-Guidelines-for-staying-hydrated.pdf.aspx (Accessed on May 13, 2019).

	○ HS Eatwell Guide recommends up to 1.9 litres/day[1395] ○ Additional fluid is required in hot environments (e.g., engine room, tropics). • Avoidance of extreme temperatures that may impair pouch adhesion. • Avoidance of contact sports or heavy mechanical work that may damage the stoma. • Specialist review confirming stability and low risk of complications. • Time-limited certificates to ensure ongoing monitoring
Mitigated risk	**Stable, well-controlled stoma** • Individual: Acceptable. • Crew: Acceptable. • Ship/Operations: Acceptable. **High-output ileostomy or history of complications** • Individual: May remain unacceptable depending on recurrence risk. • Crew: Usually acceptable. • Ship/Operations: Acceptable to unacceptable depending on likelihood of acute events. **Poorly controlled stoma** • Risk remains unacceptable, consistent with regulatory criteria for permanent unfitness
Recommendation	Seafarers with a stoma must: • Be well educated in stoma care and management during prolonged emergencies. • Carry sufficient supplies for the entire contract period, as replacement equipment may not be available worldwide. • Transport all stoma supplies as hand luggage when travelling by air. • Undergo specialist assessment confirming stability, absence of high-output complications, and low likelihood of acute events during the certificate validity period.

[1395] https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/ (Accessed on May 13, 2019).

22.12 SKIN DISEASES

22.12.1 SKIN INFECTIONS

L00-08	Skin infections Recurrence, transmission to others	T – Until satisfactorily treated P – Consider for catering staff with recurrent problems	R, L – Based on nature and severity of infection	Cured with low likelihood of recurrence

22.12.1.1 L01 – IMPETIGO

Reviewed 2026-01-19

Significance	Impetigo is a highly contagious superficial bacterial skin infection that may spread rapidly in close-contact environments such as ships. Transmission occurs through direct skin-to-skin contact or via contaminated surfaces, clothing, or equipment. Outbreaks can be difficult to control in communal living and working conditions. Although usually mild and easily treated, impetigo may recur, particularly in individuals with underlying skin conditions or in settings with repeated exposure. In rare cases, post-streptococcal complications such as glomerulonephritis or, very rarely, rheumatic fever may occur [1396] [1397].
Possible medical incident(s)	• Transmission to other crew members, leading to outbreaks on board • Recurrent impetigo (non-bullous or bullous) • Ecthyma (ulcerative form) • Post-streptococcal glomerulonephritis • Rarely, rheumatic fever • Transmission to other crew members, leading to outbreaks on board • Recurrent impetigo (non-bullous or bullous) • Ecthyma (ulcerative form) • Post-streptococcal glomerulonephritis • Rarely, rheumatic fever Causative organisms include Staphylococcus aureus, Streptococcus pyogenes (Group A), and less commonly Groups C and G streptococci. Methicillin-resistant Staphylococcus aureus (MRSA) may also be implicated [1398].
Likelihood	Impetigo is common in warm, humid, or crowded environments and has a high likelihood of transmission if untreated. Recurrence is possible, particularly in individuals with: • Atopic dermatitis • Nasal carriage of S. aureus • Poor skin integrity

[1396] Stevens DL, Bryant AE. Impetigo, Erysipelas and Cellulitis. 2016 Feb 10. In: Ferretti JJ, Stevens DL, Fischetti VA, editors. Streptococcus pyogenes : Basic Biology to Clinical Manifestations [Internet]. Oklahoma City (OK): University of Oklahoma Health Sciences Center; 2016-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK333408/

[1397] Parks T, Smeesters PR, Steer AC. Streptococcal skin infection and rheumatic heart disease. Curr Opin Infect Dis. 2012 Apr;25(2):145-53. doi: 10.1097/QCO.0b013e3283511d27. PMID: 22327467.

[1398] Nardi NM, Schaefer TJ. Impetigo. [Updated 2023 Jul 31]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430974/

	Repeated exposure in communal settings With appropriate treatment, the likelihood of recurrence is low, but without treatment or in the presence of MRSA, recurrence may be moderate.
Consequences	**Individual:** • Pain, discomfort, and reduced ability to work • Potential for ulceration (ecthyma) • Rare risk of post-streptococcal complications • Possible need for isolation until lesions is no longer infectious **Crew:** • High risk of transmission in shared accommodation or workspaces • Potential for multiple crew members to become unfit simultaneously • Increased workload for unaffected crew **Ship:** • Disruption of catering or hygiene-critical duties • Operational challenges if an outbreak occurs • Need for enhanced cleaning and infection-control measures
Unmitigated risk	Without treatment or infection-control measures: **Individual:** Unacceptable – ongoing infection and risk of complications. **Crew:** Unacceptable – high likelihood of transmission and outbreaks. **Ship:** Unacceptable – potential disruption of essential functions. **Overall** unmitigated risk: Unacceptable.
Mitigation	Mitigating measures include: • Exclusion from work until satisfactorily treated and no longer infectious. • Appropriate topical or systemic antibiotic therapy based on clinical assessment. • Screening and treatment of nasal S. aureus carriage where indicated. • Enhanced hygiene measures (handwashing, personal towels, cleaning of shared surfaces). • Avoidance of close contact or shared equipment until lesions are healed. • Specialist assessment for recurrent or MRSA-related infections. • Duty restrictions for catering staff until fully resolved
Mitigated risk	**Once satisfactorily treated and infection-free:** **Individual:** Acceptable. **Crew:** Acceptable. **Ship:** Acceptable. **For recurrent infections, particularly in catering staff or those in hygiene-critical roles:** • Risk may remain unacceptable without specialist assessment and documented low likelihood of recurrence.
Recommendation	• Seafarers with impetigo must be excluded from duty until treatment is completed and lesions are no longer infectious. • Recurrent cases require specialist evaluation to identify underlying causes (e.g., nasal carriage, skin conditions, MRSA). • Infection-control measures should be implemented on board to prevent outbreaks.

	• Catering staff with recurrent impetigo should be assessed carefully due to the risk of food contamination. • A fitness decision should be based on documented resolution and low likelihood of recurrence during the certificate validity period

22.12.1.2 B00 - HERPES SIMPLEX

Reviewed 2026-01-19

Significance	Herpes simplex virus (HSV) infection is common and may present with acute or recurrent episodes affecting the oral, genital, or ocular regions. Episodes may cause pain, discomfort, and temporary functional impairment. HSV is transmissible through direct contact, and both HSV-1 and HSV-2 may be shed asymptomatically, creating a risk of transmission even in the absence of visible lesions. In the maritime environment, close living and working conditions may facilitate spread. Ocular involvement may threaten vision, and neurological complications, although rare, may be severe. Fitness to return to sea must therefore consider symptom severity, risk of transmission, and the potential for complications.
Possible medical incident(s)	• Acute symptomatic episodes (oral, genital, or ocular) • Recurrent episodes • Asymptomatic viral shedding with risk of transmission • Ocular complications: keratitis, conjunctivitis, blepharitis, chorioretinitis, acute retinal necrosis • Neurological complications: encephalitis, Bell's palsy, aseptic meningitis • Rare complication: hepatitis [1399]. Primary genital herpes infection should prompt consideration of investigations for other sexually transmitted infections, including HIV.
Likelihood	HSV-1 typically causes oral herpes, but both HSV-1 and HSV-2 may cause genital lesions. Both viruses may cause primary and recurrent episodes, and both may be shed asymptomatically. • Recurrent HSV-1 infections of the lips and perioral area occur in 20–40% of infected individuals [1400]. • Ocular manifestations occur in <5% of patients [1401] • Herpetic keratitis recurs in 25–50% of patients within two years [1402] • Neurological complications are uncommon but potentially severe [1403]. **Likelihood categories:** • Mild recurrent oral herpes: Low. • Genital herpes with frequent recurrences: Moderate.

[1399] Pinna AD, Rakela J, Demetris AJ, Fung JJ. Five cases of fulminant hepatitis due to herpes simplex virus in adults. Dig Dis Sci 2002; 47:750.
[1400] Spruance SL, Overall JC Jr, Kern ER, et al. The natural history of recurrent herpes simplex labialis: implications for antiviral therapy. N Engl J Med 1977; 297:69.
[1401] Cook SD. Herpes simplex virus in the eye. Br J Ophthalmol 1992; 76:365.
[1402] Weiner G. Demystifying the Ocular Herpes Simplex Virus. American academy of ophthalmology. EyeNet Magazine, January 2013.
[1403] Berger JR, Houff S. Neurological Complications of Herpes Simplex Virus Type 2 Infection. Arch Neurol. 2008;65(5):596–600. doi:10.1001/archneur.65.5.596

	• Ocular herpes or neurological involvement: Moderate to high risk of recurrence or complications.
Consequences	**Individual:** • Pain, discomfort, and reduced ability to work during acute episodes. • Risk of ocular involvement with potential visual impairment. • Rare risk of neurological complications requiring urgent medical care. • Need for precautions to prevent transmission. **Crew:** • Risk of transmission through direct contact. • Need for hygiene measures to prevent spread. **Ship:** • Generally minimal operational impact. • Potential disruption if ocular or neurological complications occur, or if multiple crew members are affected
Unmitigated risk	**Without treatment or infection-control measures:** **Individual:** Acceptable to unacceptable depending on severity and location (e.g., ocular involvement). **Crew:** Unacceptable due to risk of transmission during active lesions. **Ship:** Acceptable to unacceptable depending on risk of spread and potential complications. **Overall** unmitigated risk: ○ Active lesions: Unacceptable. ○ Recurrent but controlled disease: Acceptable.
Mitigation	• Exclusion from work until lesions are healed and the individual is no longer infectious. • Appropriate antiviral therapy (topical or systemic) as clinically indicated. • Education on hygiene measures to prevent transmission. • Avoidance of close contact during active episodes. • Specialist ophthalmology assessment for ocular involvement. • Specialist evaluation for frequent recurrences or severe disease. • Consideration of suppressive antiviral therapy for recurrent genital herpes. • Duty restrictions for catering staff if recurrent lesions pose a contamination risk.
Mitigated risk	Once satisfactorily treated and no longer infectious: **Individual:** Usually acceptable, though recurrence risk remains. **Crew:** Acceptable. **Ship:** Acceptable to not acceptable depending on recurrence pattern and role (e.g., catering). Recurrent or severe ocular or neurological HSV may require case-by-case assessment.
Recommendation	• Seafarers with active HSV lesions must remain off duty until satisfactorily treated and no longer infectious. • Recurrent cases should receive specialist assessment to determine recurrence frequency, triggers, and suitability for suppressive therapy.

	• Ocular or neurological involvement requires specialist evaluation and careful consideration of fitness. • Advice should be provided regarding transmission prevention, including avoidance of direct contact during active episodes. • For primary genital herpes, appropriate investigations (including HIV testing) should be recommended. • Fitness decisions should be based on documented resolution, recurrence risk, and the individual's role on board.

22.12.1.3 B02 – HERPES COSTER (VARICELLA-ZOSTER)

Reviewed 2026-01-19

Significance	Varicella-zoster virus (VZV) is found worldwide and is highly contagious. More than 90% of unimmunised individuals become infected during their lifetime. The age at which primary infection occurs varies geographically: in the UK, US, and Japan, approximately 80% of individuals have been infected by age 10, whereas in India, South-East Asia, and the Caribbean, most infections occur between ages 20 and 30 [1404] [1405] [1406]. In Norway, 90–95% of adults have had varicella [1407]. Although varicella (chickenpox) is usually self-limiting, adults experience significantly higher morbidity and mortality. US mortality data (1990–1994) show that adults aged >20 years accounted for 55% of varicella-related deaths despite representing <5% of cases [1408]. Adults have a 25-fold higher risk of complications compared with children [Reference needed], particularly those with compromised immunity [1409]. Herpes zoster (shingles) results from reactivation of latent VZV in dorsal root ganglia. It causes a painful, unilateral vesicular rash and may lead to complications such as post-herpetic neuralgia or ocular involvement. Both varicella and zoster may impair a seafarer's ability to work and pose a risk of transmission in the close-contact environment of a ship.
Possible medical incident(s)	**Acute Varicella (Chickenpox)** • Encephalitis • Guillain–Barré syndrome • Transverse myelitis • Cranial nerve palsies • Varicella pneumonia

[1404] Lee BW. Review of varicella zoster seroepidemiology in India and Southeast Asia. Trop Med Int Health. 1998;3:886-890.
[1405] Kowitdamrong E, Pancharoen C, Thammaborvorn R, et al. The prevalence of varicella-zoster virus infection in normal healthy individuals aged above 6 months. J Med Assoc Thai. 2005;88(suppl 4):S7-S11.
[1406] Garnett GP, Cox MJ, Bundy DA, et al. The age of infection with varicella-zoster virus in St Lucia, West Indies. Epidemiol Infect. 1993;110:361-372.
[1407] https://www.fhi.no/nettpub/smittevernveilederen/sykdommer-a-a/varicella-vannkopper-og-herpes-zost/
[1408] Centers for Disease Control and Prevention. Varicella-related deaths among adults - United States, 1997. MMWR Morb Mortal Wkly Rep. 1997;46:409-412
[1409] Guess HA, Broughton DD, Melton LJ 3rd, Kurland LT. Chickenpox hospitalizations among residents of Olmsted County, Minnesota, 1962 through 1981. A population-based study. Am J Dis Child. 1984;138(11):1055.

	• Secondary bacterial skin infections (cellulitis, myositis, necrotising fasciitis, toxic shock syndrome) • Pharyngitis and otitis media **Herpes Zoster (Shingles)** • Post-herpetic neuralgia • Secondary bacterial infection • Ocular complications (keratitis, uveitis, acute retinal necrosis) • Neurological complications (encephalitis, meningitis, facial nerve palsy) • Disseminated zoster in immunocompromised individuals
Likelihood	**Varicella** • Varicella pneumonia is the most common serious complication in immunocompetent adults, with an incidence of 1:400 cases[1410]. • Risk factors include cigarette smoking, pregnancy, and male sex[1411] [1412] [1413], • it typically develops within one to six days after the rash has appeared and • its mortality is 10 – 30% [1414]. • Secondary household attack rates edceed 90% in susceptible individuals [1415]. • Incubation period: 10–21 days (average 14–16 days) [1416], and • infectious period: 48 hours before rash onset until all lesions have crusted. • Second episodes of varicella may occur in up to 13% of individuals in post-vaccination surveillance [1417]. **Herpes Zoster** • Lifetime risk of zoster is approximately 32%, with cumulative incidence of 10–20% [1418]. • Incidence increases with age [1419]. • Risk factors include age, recent physical trauma, malignancy, chronic lung or kidney disease, and disorders of cell-mediated immunity [1420] [1421]. • Post-herpetic neuralgia occurs in ~7.9% of cases, with risk increasing with age, and • secondary bacterial infection occurs in ~2.3% [1422]. • Infectious period: from rash onset until all lesions have crusted.

[1410] Hockberger RS, Rothstein RJ. Varicella pneumonia in adults: a spectrum of disease. Ann Emerg Med. 1986;15(8):931.
[1411] Fairley CK, Miller E. Varicella-zoster virus epidemiology--a changing scene? J Infect Dis. 1996;174 Suppl 3:S314.
[1412] Esmonde TF, Herdman G, Anderson G. Chickenpox pneumonia: an association with pregnancy. Thorax. 1989;44(10):812.
[1413] WEBER DM, PELLECCHIA JA. VARICELLA PNEUMONIA: STUDY OF PREVALENCE IN ADULT MEN. JAMA. 1965;192:572.
[1414] Triebwasser JH, Harris RE, Bryant RE, Rhoades ER. Varicella pneumonia in adults. Report of seven cases and a review of literature. Medicine (Baltimore). 1967;46(5):409.
[1415] Wharton M. The epidemiology of varicella-zoster virus infections. Infect Dis Clin North Am. 1996;10(3):571
[1416] Heininger U, Seward JF. Varicella. Lancet. 2006;368(9544):1365.
[1417] Hall S, Maupin T, Seward J, Jumaan AO, Peterson C, Goldman G, Mascola L, Wharton M. Second varicella infections: are they more common than previously thought? Pediatrics. 2002;109(6):1068
[1418] Straus SE, Ostrove JM, InchauspéG, Felser JM, Freifeld A, Croen KD, Sawyer MH. NIH conference. Varicella-zoster virus infections. Biology, natural history, treatment, and prevention. Ann Intern Med. 1988;108(2):221
[1419] Ragozzino MW, Melton LJ 3rd, Kurland LT, Chu CP, Perry HO. Population-based study of herpes zoster and its sequelae. Medicine (Baltimore). 1982;61(5):310.
[1420] Zhang JX, Joesoef RM, Bialek S, Wang C, Harpaz R. Association of physical trauma with risk of herpes zoster among Medicare beneficiaries in the United States. J Infect Dis. 2013;207(6):1007
[1421] McDonald JR, Zeringue AL, Caplan L, Ranganathan P, Xian H, Burroughs TE, Fraser VJ, Cunningham F, Eisen SA. Herpes zoster risk factors in a national cohort of veterans with rheumatoid arthritis. Clin Infect Dis. 2009;48(10):1364.
[1422] Galil K, Choo PW, Donahue JG, Platt R. The sequelae of herpes zoster. Arch Intern Med. 1997;157(11):1209

	Likelihood categories: • Uncomplicated varicella or zoster: Moderate likelihood of short-term morbidity. • Adults with varicella: Moderate to high likelihood of complications. • Immunocompromised individuals: High likelihood of severe disease. • Zoster recurrence: Low to moderate depending on risk factors.
Consequences	**Individual:** • Pain, fever, malaise, and inability to work during acute illness. • Risk of pneumonia, neurological complications, or post-herpetic neuralgia. • Ocular involvement may threaten vision. • Need for isolation until no longer infectious. **Crew:** • High risk of transmission of varicella to susceptible individuals. • Risk of transmission of zoster to unvaccinated or immunocompromised crew. • Potential for multiple crew members to become unfit simultaneously. **Ship:** • Operational disruption due to isolation requirements or multiple cases. • Increased workload for unaffected crew. • Possible need for medical evacuation in severe cases.
Unmitigated risk	Without mitigating measures: **Individual:** Unacceptable – risk of complications and inability to work. **Crew:** Unacceptable – high risk of transmission. **Ship:** Unacceptable – potential for outbreaks and operational disruption. **Overall unmitigated risk:** Unacceptable.
Mitigation	• Exclusion from duty until all lesions are fully crusted and the individual is no longer infectious. • Antiviral therapy where clinically indicated. • Avoidance of contact with unvaccinated or immunocompromised individuals. • Specialist assessment for severe disease, complications, or immunocompromised status. • Vaccination history review where relevant. • Education on hygiene and transmission prevention. • Time-limited certificates where recurrence risk or complications require monitoring.
Mitigated risk	**Once lesions have crusted and complications have been excluded:** **Individual:** Acceptable. **Crew:** Acceptable. **Ship:** Acceptable. **If complications (e.g., post-herpetic neuralgia, ocular involvement, neurological symptoms) are present:** • Risk may remain unacceptable, requiring case-by-case assessment.
Recommendation	• Employees with active varicella must not be declared fit until all lesions have crusted for at least 24 hours and the disease is no longer contagious.

	• Individuals with herpes zoster must not be declared fit until all lesions are dry and crusted. • They should avoid contact with unvaccinated or immunocompromised persons until fully non-infectious. • Any case with complications requires an individualised risk assessment and, where appropriate, specialist evaluation. • Fitness decisions should consider the risk of transmission, recurrence, and the individual's role on board.

22.12.2 OTHER SKIN DISEASES

L10-99	Other skin diseases, e.g. eczema, dermatitis, psoriasis. Recurrence, sometimes occupational cause	T – Until investigated and satisfactorily treated	Case-by-case decision R – If aggravated by heat, or substances at work	Stable, not impairing

22.13 DISEASES OF THE MUSCULOSKELETAL SYSTEM

22.13.1 OSTEOARTHRITIS AND OTHER JOINT DISEASES

M10-23	Osteoarthritis, other joint diseases and subsequent joint replacement. Pain and mobility limitation affecting normal or emergency duties. Replacement joint: Possibility of infection or dislocation. Limited life of replacement joints.	T – Full recovery of function and specialist advice required before return to sea after hip or knee replacement P – For advanced and severe cases	R – Case-by-case assessment based on job requirements and history of condition. Consider emergency duties and evacuation from ship. Should meet general fitness requirements.	Case-by-case assessment if able to fully meet routine and emergency duty requirements. Very low likelihood of worsening such that duties could not be undertaken.

22.13.1.1 M15-19 - OSTEOARTHRITIS (OA)

Reviewed 2026-01-20

Significance	Osteoarthritis is a heterogeneous condition that varies considerably between individuals and may remain stable over extended periods. It can cause reduced physical function primarily due to pain and/or restricted joint movement. This reduction in function may impair the seafarer's ability to safely and effectively perform job tasks on board, potentially posing a risk to their own health and safety, the safety of other crew members, and the safe operation of the ship.
Possible medical incident(s)	• Reduced physical performance impacting routine and emergency duties. • Pain episodes causing distraction or incapacitation. • Adverse effects from analgesic or anti-inflammatory medications. • Functional limitations related to prosthetic joints following joint replacement surgery, including risk of infection or dislocation.

Likelihood	The likelihood of medical incidents varies individually and depends on the severity and progression of osteoarthritis. Scientific data on annual incidence rates of disabling episodes in seafarers with OA are limited; however, the probability of significant deterioration leading to inability to perform duties is generally considered very low (<2% per year) in stable cases [1423] [1424].
Consequences	**Individual:** Potential for pain-related impairment, reduced mobility, and medication side effects affecting overall health and safety. **Crew:** Possible increased risk if the individual is unable to perform safety-critical tasks or emergency responses. **Ship:** Risk to safe operation if the seafarer's functional limitations compromise emergency procedures or critical operations.
Unmitigated risk	**Individual**: Moderate, due to potential pain and mobility limitations. **Crew:** Low to moderate, depending on the individual's role and ability to perform emergency duties. **Ship:** Low, assuming other crew members can compensate; however, risk increases if the affected individual holds safety-critical responsibilities. **Overall**, the unmitigated risk may be acceptable in many cases but requires careful individual assessment.
Mitigation	• Medical management of pain and inflammation. • Use of assistive devices or mobility aids as appropriate. • Restrictions or modifications of duties, particularly emergency or safety-critical tasks. • Time-limited certification with regular re-evaluation (maximum two-year validity). • Specialist medical advice and physical performance testing to assess functional capacity. • In cases of joint replacement, ensuring full recovery and specialist clearance before return to sea.
Mitigated risk	Following implementation of appropriate mitigation: **Individual:** Risk is reduced to low or very low, with improved functional capacity and symptom control. **Crew:** Risk is reduced to low, provided emergency duties and safety-critical tasks are appropriately managed or restricted. **Ship:** Risk is reduced to low, ensuring safe operation and emergency preparedness.

[1423] Neogi T. The epidemiology and impact of pain in osteoarthritis. Osteoarthritis Cartilage. 2013 Sep;21(9):1145-53. doi: 10.1016/j.joca.2013.03.018. PMID: 23973124; PMCID: PMC3753584.
[1424] Dell'Isola A, Recenti F, Giardulli B, Lawford B J, Kiadaliri A. Osteoarthritis year in review 2025: Epidemiology and therapy. Osteoarthritis and Cartilage, 2025;33(11):1300-1306. ISSN 1063-4584. https://doi.org/10.1016/j.joca.2025.08.015.

22.13.1.2 M05-09 – RHEUMATOID ARTHRITT (RA)

Reviewed 2026-01-20

Significance	Rheumatoid arthritis is a chronic, progressive autoimmune disease with considerable variability in severity among individuals. It commonly results in reduced physical performance due to joint inflammation, pain, restricted range of motion, and decreased muscular strength in affected body parts. The disease may also involve systemic manifestations beyond the musculoskeletal system, which can further impact the seafarer's health and functional capacity. These factors may compromise the ability to safely and effectively perform job tasks on board, posing potential risks to the individual's health and safety, the safety of other crew members, and the safe operation of the ship.
Possible medical incident(s)	• Reduced physical performance affecting routine and emergency duties. • Pain episodes causing distraction or incapacitation. • Adverse effects from medications, particularly immunosuppressive therapies. • Functional limitations related to joint damage or prosthetic joint replacements. • Extra-articular involvement affecting organs such as skin, eyes, heart, lungs, and kidneys, which may complicate the clinical course.
Likelihood	Approximately 40% of patients with rheumatoid arthritis develop extra-articular manifestations involving other musculoskeletal structures or organs (e.g., skin, eyes, heart, lungs, kidneys) [1425]. These manifestations are more prevalent in severe disease, older age groups, presence of rheumatoid factor and other autoantibodies, early disability, and in patients who smoke. The clinical course and scope of these systemic involvements are variable and beyond the scope of this guidance; however, their presence or absence must be considered in the individualised risk assessment for each seafarer with RA. Studies indicate that physical function declines as disease activity increases, with joint inflammation causing cartilage and bone destruction that impairs joint mobility and strength. This leads to progressive disability affecting daily activities and work capacity [1426].
Consequences	**Individual:** Potential for significant impairment due to joint and systemic disease, medication side effects, and reduced physical capacity. **Crew:** Increased risk if the affected individual is unable to perform safety-critical or emergency duties. **Ship:** Potential compromise of safe operation if the seafarer's condition limits emergency response or critical tasks.

[1425] Turesson C, O'Fallon WM, Crowson CS, Gabriel SE, Matteson EL. Extra-articular disease manifestations in rheumatoid arthritis: incidence trends and risk factors over 46 years. Ann Rheum Dis. 2003;62(8):722.
[1426] Yamamoto H, Suzuki M, Kojima T et al. Evaluation of physical function in rheumatoid arthritis patients by locomotive syndrome stage, Modern Rheumatology, 2025; roaf098, https://doi.org/10.1093/mr/roaf098

Unmitigated risk	The unmitigated risk varies widely depending on disease severity, systemic involvement, and treatment side effects. Without appropriate management, the risk to individual health and safety, as well as to crew and ship safety, may be moderate to high.
Mitigation	Mitigating measures include: • Specialist rheumatological assessment and ongoing management. • Careful monitoring and management of medication side effects, especially immunosuppressive therapies. • Physical performance testing to assess functional capacity. • Possible restrictions or modifications of duties, particularly emergency and safety-critical tasks. • Time-limited certification with regular re-evaluation (maximum two-year validity).
Mitigated risk	With appropriate mitigation, the risk to the individual, crew, and ship can be reduced to acceptable levels, allowing the seafarer to continue service with or without restrictions. If mitigated risk remains unacceptable, temporary or permanent unfitness declarations may be necessary, depending on the likelihood of improvement.
Recommendation	Physical performance testing is usually required to objectively evaluate functional capacity. Particular attention should be given to the side effects of medications, especially immunotherapy. Extra-articular manifestations must be carefully considered during risk assessment.

22.13.1.3 M10 - GOUT

Reviewed 2026-01-20

Significance	Gout is a metabolic disorder characterised by episodes of acute inflammatory arthritis that can significantly impair physical performance. In addition to the impact of acute flares, gout carries risks of complications related to both the disease and its treatment, including progression to chronic arthropathy, renal disease, and potential need for evacuation due to complications such as renal calculi. These factors may compromise the seafarer's ability to safely and effectively perform routine and emergency duties, posing risks to their own health and safety, the safety of other crew members, and the safe operation of the ship.
Possible medical incident(s)	• Acute gout flares causing severe joint inflammation and pain. • Progression to chronic gouty arthropathy with joint damage and functional impairment. • Renal complications including uric acid renal calculi and chronic nephropathy. • Side effects of urate-lowering therapies, which may include hypersensitivity reactions and other adverse effects.
Likelihood	There is a well-established causal relationship between hyperuricaemia and gout; however, not all individuals with elevated serum urate develop gout. The incidence of gout increases with higher serum urate levels.

	Risk factors for hyperuricaemia include dietary factors (e.g., high consumption of seafood, meat, and alcohol) [1427], increased endogenous urate production (e.g., haematological malignancies), certain medications (e.g., diuretics), obesity, insulin resistance, and hypertension [1428]. Acute gout attacks are self-limiting but have a high risk of recurrence without long-term treatment: approximately 62%, 78% and 84% during the first, second and third years respectively [1429]. If untreated, about 2% of patients develop severe, debilitating arthritis typically around 20 years after the initial attack [1430]. Untreated gout and hyperuricaemia are also associated with renal insufficiency. In a veteran population with gout, the incidence of kidney disease was lower in men with controlled serum urate levels compared to those with high serum urate levels: 2% vs. 4% at year 1, 3% vs. 6% at year 2, and 5% vs. 9% at year 3, respectively [1431].
Consequences	**Individual:** Acute attacks cause severe pain and functional impairment, potentially incapacitating the seafarer. Chronic disease may lead to persistent disability and renal complications. **Crew:** Risk of compromised emergency response and safety-critical duties if the affected individual is incapacitated. **Ship:** Potential impact on safe operation if the seafarer's condition limits their ability to perform essential tasks.
Unmitigated risk	Without treatment or mitigation, the risk of recurrent acute attacks and progression to chronic arthropathy and renal disease is high, posing significant risks to individual health and safety, as well as to crew and ship safety.
Mitigation	Mitigating measures include: • Effective management of acute gout attacks to control pain and inflammation. • Long-term urate-lowering therapy to reduce recurrence risk and prevent progression. • Monitoring and management of renal function. • Temporary removal from duty during acute attacks until resolution. • Restrictions or modifications of duties during periods of active disease or complications. • Time-limited certification with regular medical review.
Mitigated risk	With appropriate treatment and management, the risk of acute attacks and complications can be significantly reduced, allowing the seafarer to safely

[1427] Choi HK, Atkinson K, Karlson EW, et al. Purine-rich foods, dairy and protein intake and the risk of gout in men. N Engl J Med. 2004;350:1093-1103.
[1428] Choi HK, Atkinson K, Karlson EW, et al. Obesity, weight change, hypertension, diuretic use, and risk of gout in men: the Health Professionals Follow-up Study. Arch Intern Med. 2005;165:742-748.
[1429] Yu TF, Gutman AB. Efficacy of colchicine prophylaxis in gout. Prevention of recurrent gouty arthritis over a mean period of five years in 208 gouty subjects. Ann Intern Med. 1961;55:179-192.
[1430] Hench PS. The diagnosis of gout and gouty arthritis. J Lab Clin Med. 1936;220:48.
[1431] Krishnan E, Akhras KS, Sharma H, et al. Serum urate and incidence of kidney disease among veterans with gout. J Rheumatol. 2013;40:1166-1172.

	perform duties with or without restrictions. Persistent or severe disease despite treatment may necessitate temporary or permanent unfitness declarations.
Recommendation	An acute gout attack is painful and self-limiting but may severely impair the ability to perform routine or emergency duties. Therefore, any seafarer experiencing an acute episode at the time of medical examination should be declared temporarily unfit until the episode is controlled and further assessment is completed. Long-term management plans should be established to minimise recurrence and complications.

22.13.1.4 Z47 – JOINT REPLACEMENT

Reviewed 2026-01-20

Significance	Joint replacement surgery can substantially improve an individual's quality of life by reducing pain and enhancing physical function. However, it is associated with potential complications that may affect the seafarer's ability to safely and effectively perform routine and emergency duties on board. These complications must be carefully considered in the fitness assessment.
Possible medical incident(s)	• Periprosthetic joint infection (PJI) • Thromboembolism • Implant loosening or mechanical failure • Cobalt toxicity (in cases of metal-on-metal prostheses) • Joint dislocation • Functional impairment due to prosthetic limitations or complications.
Likelihood	The prevalence of periprosthetic joint infection ranges from 1% to 3% following hip and knee replacement surgeries and represents a major cause of revision surgery [1432] [1433] [1434]. Specifically, infection rates are approximately 0.5% to 2.0% for knee replacements, 0.5% to 1.0% for hip replacements, and less than 1% for shoulder replacements [1435] [1436]. The highest risk period for infection is within the first two years postoperatively [1437]. Patients with rheumatoid arthritis have a 50% increased risk of infection following knee arthroplasty compared to those with osteoarthritis, with an absolute infection risk of approximately 1.2% in RA patients [1438].

[1432] Parvizi J, Adeli B, Zmistowski B, et al. Management of periprosthetic joint infection: the current knowledge: AAOS exhibit selection. J Bone Joint Surg Am 2012; 94:e104.
[1433] Vessely MB, Whaley AL, Harmsen WS, et al. The Chitranjan Ranawat Award: Long-term survivorship and failure modes of 1000 cemented condylar total knee arthroplasties. Clin Orthop Relat Res 2006; 452:28.
[1434] Fehring TK, Odum S, Griffin WL, et al. Early failures in total knee arthroplasty. Clin Orthop Relat Res 2001; :315.
[1435] Namba RS, Inacio MC, Paxton EW. Risk factors associated with deep surgical site infections after primary total knee arthroplasty: an analysis of 56,216 knees. J Bone Joint Surg Am 2013; 95:775.
[1436] Edwards JR, Peterson KD, Mu Y, et al. National Healthcare Safety Network (NHSN) report: data summary for 2006 through 2008, issued December 2009. Am J Infect Control 2009; 37:783.
[1437] Beam E, Osmon D. Prosthetic Joint Infection Update. Infect Dis Clin North Am 2018; 32:843.
[1438] Ravi B, Croxford R, Hollands S, et al. Increased risk of complications following total joint arthroplasty in patients with rheumatoid arthritis. Arthritis Rheumatol 2014; 66:254.

	The prevalence of aseptic (non-infectious) loosening within the first 6.5 years after primary joint arthroplasty ranges from approximately 1% to 5% [1439]. Revision surgery rates, which include implant loosening as a major cause, are about 6% at five years and 12% at ten years following total hip or knee replacement (National Joint Registry data) [1440]. More recent implant-related failure rates show implant loosening as the most common cause, with rates around 0.3% reported in current-generation implants, though this may vary by implant type and patient factors [1441]. In summary, joint dislocation after replacement surgery occurs in approximately 1–4% of patients within the first two years, with the highest risk in the early postoperative period [1442] [1443] [1444].
Consequences	**Individual:** Potential for serious complications including infection, thromboembolism, and prosthetic failure, which may impair physical function and necessitate further surgery or prolonged treatment. **Crew:** Risk of compromised emergency response and safety-critical duties if the affected individual experiences complications or functional limitations. **Ship:** Potential impact on safe operation if the seafarer's condition limits their ability to perform essential tasks.
Unmitigated risk	Without appropriate monitoring and management, the risk of complications such as infection or dislocation may be significant, posing moderate to high risk to individual health and safety, as well as to crew and ship safety, and the risk is usually regarded as unacceptable.
Mitigation	Mitigating measures include: • Preoperative assessment and detailed discussion with an experienced orthopaedic surgeon regarding the likelihood of return to work and ability to perform routine and emergency duties. • Postoperative specialist medical reports detailing physical capability, functional status, and risks of dislocation, infection, and need for further surgery. • Time-limited or restricted medical certification to allow for ongoing monitoring and rapid access to medical care in case of complications. • Duty restrictions or modifications as necessary based on functional assessment.

[1439] Kienzle A, Walter S, von Roth P, Fuchs M, Winkler T, Müller M. High Rates of Aseptic Loosening After Revision Total Knee Arthroplasty for Periprosthetic Joint Infection. JB JS Open Access. 2020 Aug 12;5(3):e20.00026. doi: 10.2106/JBJS.OA.20.00026. PMID: 32984749; PMCID: PMC7480970.
[1440] Labek G, Thaler M, Janda W, Agreiter M, Stöckl B. Revision rates after total joint replacement. J Bone Joint Surg Br. 2011;93-B(3):293-297. doi:10.1302/0301-620X.93B3.25467
[1441] Olson N R, Strait A V, Ho P H, Fricka K B, Hamilton W G, Sershon R A. New and Improved? Analysis of Generational Implant-Related Failures and All-Cause Revision Indications for Total Knee Arthroplasty Over a 30-Year Period. The Journal of Arthroplasty, 2025;40(9):2235-2242.ISSN 0883-5403. https://doi.org/10.1016/j.arth.2025.04.046.
[1442] Kunutsor SK, Barrett MC, Beswick AD, Judge A, Blom AW, Wylde V, Whitehouse MR. Risk factors for dislocation after primary total hip replacement: meta-analysis of 125 studies involving approximately five million hip replacements. Lancet Rheumatol. 2019 Oct;1(2):e111-e121. doi: 10.1016/s2665-9913(19)30045-1. PMID: 35079707; PMCID: PMC7612258.
[1443] Hermansen, L. L., Iversen, T. F., Iversen, P., Viberg, B., & Overgaard, S. (2024). The "true" 1-year incidence of dislocation after primary total hip arthroplasty: validation of an algorithm identifying dislocations in the Danish National Patient Register based on 5,415 patients from the Danish Hip Arthroplasty Register. Acta Orthopaedica, 95, 380–385. https://doi.org/10.2340/17453674.2024.41064
[1444] Horberg JV, Coobs BR, Jiwanlal AK, Betzle CJ, Capps SG, Moskal JT. Dislocation rates following total hip arthroplasty via the direct anterior approach in a consecutive, non-selective cohort. Bone Joint J. 2021;103-B(7 Supple B):38-45. doi:10.1302/0301-620X.103B7.BJJ-2020-2297.R1

Mitigated risk	With appropriate surgical management, rehabilitation, and ongoing medical monitoring, the risk of complications can be reduced to acceptable levels, allowing the seafarer to safely perform duties with or without restrictions. Persistent or recurrent complications may necessitate temporary or permanent unfitness declarations.
Recommendation	• Joint replacement may be the only viable option for pain relief and restoration of function when conservative management fails. • Specialist advice and detailed postoperative evaluation are essential before the seafarer is deemed fit to return to work.

22.13.2 RECURRENT INSTABILITY OF SHOULDER OR KNEE JOINTS

M24.4	Recurrent instability of shoulder or knee joints Sudden limitation of mobility, with pain	T – Until satisfactorily treated	R – Case-by-case assessment of occasional instability	Treated; very low risk of recurrence

22.13.2.1 M24.2, M25.3 - RECURRENT INSTABILITY OF SHOULDER OR KNEE JOINTS

Significance	Recurrent instability of the shoulder or knee joints can lead to sudden limitations in mobility accompanied by pain, which may significantly impair the seafarer's ability to perform routine and emergency duties. Instability episodes may result in joint dislocation, subluxation, or mechanical locking, all of which compromise physical function and safety on board.
Possible medical incident(s)	• Sudden joint dislocation or subluxation causing acute pain and functional impairment. • Mechanical locking or giving way of the joint, leading to falls or inability to perform tasks. • Chronic joint instability resulting in progressive joint damage and reduced physical capability.
Likelihood	**Shoulder instability:** Following a primary shoulder dislocation, the risk of recurrent instability is high, with studies reporting recurrence rates of approximately 55.7% within two years, increasing to around 66.8% over longer follow-up periods [1445]. Arthroscopic stabilisation procedures may reduce this risk to approximately 10% [1446]. **Knee instability:** Recurrent patellofemoral instability rates after medial patellofemoral ligament (MPFL) reconstruction vary widely, ranging from 11% to 60% depending on treatment and patient factors [1447]. Conservative and

[1445] Robinson CM, Howes J, Murdoch H, Will E, Graham C. Functional outcome and risk of recurrent instability after primary traumatic anterior shoulder dislocation in young patients. J Bone Joint Surg Am. 2006 Nov;88(11):2326-36. doi: 10.2106/JBJS.E.01327. PMID: 17079387.
[1446] Scanaliato J, Frank R, Lin A. Traumatic Anterior Shoulder Instability (TUBS). American Shoulder and Elbouw Surgeons. OrthoBullets. Updated 2 Sept 2025.
[1447] Wilkens OE, Hannink G, van de Groes SAW. Recurrent patellofemoral instability rates after MPFL reconstruction techniques are in the range of instability rates after other soft tissue realignment techniques. Knee Surg Sports Traumatol Arthrosc. 2020 Jun;28(6):1919-1931. doi: 10.1007/s00167-019-05656-3. Epub 2019 Aug 7. PMID: 31392368; PMCID: PMC7253385.

	surgical treatments show variable success, with some patients reporting persistent instability beyond two years [1448].
Consequences	**Individual:** Episodes of instability may cause acute pain, functional limitation, and risk of injury. Chronic instability can lead to joint degeneration and reduced physical capacity. **Crew:** Impaired ability to perform safety-critical and emergency duties may increase risk to the individual and others. **Ship:** Compromised emergency response and operational safety if the seafarer's physical function is impaired.
Unmitigated risk	Without treatment, the risk of recurrent instability and associated complications is high, particularly in younger, active individuals or those with significant joint damage. This poses a moderate to high risk to individual health and safety, as well as to crew and ship safety.
Mitigation	With appropriate treatment and monitoring, the risk of recurrent instability can be reduced to acceptable levels, allowing safe performance of duties with or without restrictions. Persistent instability despite treatment may necessitate temporary or permanent unfitness declarations.
Mitigated risk	The multiple causes of joint disease and loss of function, stability, and mobility are beyond the scope of this guidance. Any seafarer with a history of significant joint injury resulting in loss of function or physical capability must be assessed by an orthopaedic surgeon prior to certification. Individualised risk assessment should consider the likelihood of recurrence, including dislocation or locking, and the impact on the ability to perform routine and emergency duties. Specialist reports and physical testing are strongly recommended.

22.13.3 BACK PAIN

M54.5	Back pain Pain and mobility limitation. Likelihood of acute exacerbation.	T – In acute stage P – If recurrent or incapacitating	Case-by-case assessment	Case-by-case assessment

22.13.3.1 M54.5 - BACK PAIN

Reviewed 2026-01-20

Significance	Low back pain is an extremely common condition, with up to 84% of adults experiencing it at some point in their lives [1449]. The prevalence increases with age, and annual incidence rates vary widely from 4% to 93% [1450]. Women tend

[1448] Selçuk H, Roos EM, Grønne DT, Thorlund JB, Sarı Z, Skou ST. Do self-reported knee instability, difficulty twisting, and knee confidence change after exercise and education in patients with knee osteoarthritis? Musculoskeletal Care. 2024 Jun;22(2):e1884. doi: 10.1002/msc.1884. PMID: 38635457.
[1449] Deyo RA, Tsui-Wu YJ. Descriptive epidemiology of low-back pain and its related medical care in the United States. Spine (Phila Pa 1976). 1987;12(3):264.
[1450] Rubin DI. Epidemiology and risk factors for spine pain. Neurol Clin. 2007;25:353-371.

	to have a slightly higher incidence than men [1451]. Musculoskeletal lower back pain is defined as pain, stiffness, or soreness located below the 12th rib and above the gluteal folds, persisting for up to 12 weeks. It is a diagnosis of exclusion, made after ruling out specific causes such as neurological compromise, neoplasia, inflammatory arthritis, fracture, or referred pain. The exact source of pain is often difficult to determine but may involve any combination of pathology affecting the intervertebral discs, vertebrae, facet joints, ligaments, and/or muscles [1452]. Risk factors associated with back pain include smoking, obesity, increasing age, female gender, physically strenuous work, sedentary work, psychologically demanding work, low educational attainment, Workers' Compensation insurance claims, job dissatisfaction, and psychological factors such as somatisation disorder, anxiety, and depression [1453] [1454] [1455] [1456] [1457].
Possible medical incident(s)	• Acute exacerbations of back pain causing significant pain and mobility limitation. • Chronic or recurrent back pain leading to functional impairment. • Potential for neurological symptoms if underlying pathology progresses.
Likelihood	Approximately 90% of acute non-specific lower back pain cases improve substantially within 4 to 6 weeks. However, only about 25% of patients may experience full recovery at one year [1458]. Recurrence rates are significant, with 50% to 59% of patients experiencing some degree of pain and 20% to 35% suffering functionally disabling back pain between 6 and 22 months following the initial episode [1459].
Consequences	**Individual:** Pain and mobility limitations may impair the ability to perform routine and emergency duties. Chronic or recurrent pain can lead to long-term disability. **Crew:** Reduced capacity of the affected individual may increase risk during emergency situations or safety-critical tasks. **Ship:** Potential impact on safe operation if the seafarer's physical function is compromised.

[1451] Kopec JA, Sayre EC, Esdaile JM. Predictors of back pain in a general population cohort. Spine. 2004;29:70-77.
[1452] Chou R, Qaseem A, Snow V, et al. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med. 2007;147:478-491.
[1453] Skovron ML, Szpalski M, Nordin M, Melot C, Cukier D. Sociocultural factors and back pain. A population-based study in Belgian adults. Spine (Phila Pa 1976). 1994;19(2):129.
[1454] Croft PR, Papageorgiou AC, Ferry S, Thomas E, Jayson MI, Silman AJ. Psychologic distress and low back pain. Evidence from a prospective study in the general population. Spine (Phila Pa 1976). 1995;20(24):2731.
[1455] Croft PR, Papageorgiou AC, Thomas E, Macfarlane GJ, Silman AJ. Short-term physical risk factors for new episodes of low back pain. Prospective evidence from the South Manchester Back Pain Study. Spine (Phila Pa 1976). 1999;24(15):1556.
[1456] Macfarlane GJ, Thomas E, Papageorgiou AC, Croft PR, Jayson MI, Silman AJ. Employment and physical work activities as predictors of future low back pain. Spine (Phila Pa 1976). 1997;22(10):1143.
[1457] Steffens D, Ferreira ML, Latimer J, Ferreira PH, Koes BW, Blyth F, Li Q, Maher CG. What triggers an episode of acute low back pain? A case-crossover study. Arthritis Care Res (Hoboken). 2015 Mar;67(3):403-10.
[1458] Croft PR, Macfarlane GJ, Papageorgiou AC, et al. Outcome of low back pain in general practice: a prospective study. BMJ. 1998;316:1356-1359.
[1459] Carey TS, Garrett JM, Jackman A, et al. Recurrence and care seeking after acute back pain: results of a long-term follow-up study. Med Care. 1999;37:157-164.

Unmitigated risk	Without appropriate management, the risk of recurrent or chronic back pain and associated functional impairment is moderate to high, potentially affecting individual health and safety, as well as crew and ship safety. Hence the risk may be unacceptable.
Mitigation	• Early return to usual activities and lifestyle modifications. • Pharmacological treatment including non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics. • Physiotherapy and rehabilitation programmes. • Other therapies such as spinal manipulation where appropriate. • Specialist referral if pain persists beyond 4 to 6 weeks or is recurrent. • Individualised risk assessment incorporating pain severity, treatment requirements, physical capability, functional ability, and recurrence risk.
Mitigated risk	With appropriate treatment and management, the risk of functional impairment and recurrence can be reduced to acceptable levels, allowing the seafarer to safely perform duties with or without restrictions. Persistent or incapacitating back pain may necessitate temporary or permanent unfitness declarations.
Recommendation	When issuing a medical certificate for a seafarer with back pain, the examining physician should ensure comprehensive information is available, including clinical reports and imaging results where appropriate. An individualised risk assessment should be conducted considering the degree of pain, treatment needs, follow-up requirements, physical and functional capacity, and the likelihood of recurrence impacting the seafarer's ability to perform routine and emergency duties.

22.13.4 LIMB PROSTHESIS

Y 83.4 Z 97.1	Limb prosthesis Mobility limitation affecting normal or emergency duties	P – If essential duties cannot be performed	R – If routine and emergency duties can be performed but there are limitations on specific non-essential activities	If general fitness requirements (C – Physical capability requirements) are fully met. Arrangements for fitting prosthesis in emergency must be confirmed.

22.13.4.1 Z97.1 - LIMB PROTHESIS

Reviewed 2026-01-20

Significance	The use of a limb prosthesis can restore mobility and functional capacity following amputation, enabling many individuals to perform routine and emergency duties on board ship. However, prosthetic use may impose limitations on physical performance, dexterity, and endurance, which could affect the ability to carry out safety-critical tasks, including self-rescue capability. Additionally, underlying medical conditions such as diabetes mellitus or peripheral vascular disease may complicate prosthetic use and overall fitness.

Possible medical incident(s)	• Difficulty or delay in donning the prosthesis during emergency situations, potentially compromising timely response. • Prosthesis malfunction or discomfort leading to impaired mobility or pain. • Skin breakdown, infection, or ulceration at the prosthetic interface, especially in patients with peripheral vascular disease or diabetes. • Fatigue or overuse injuries due to altered biomechanics.
Likelihood	The likelihood of prosthesis-related complications varies depending on the individual's health status, prosthesis type, and level of amputation. Studies indicate that skin complications occur in approximately 20% to 30% of prosthesis users annually, with higher rates in those with comorbidities such as diabetes [1460]. The ability to don the prosthesis independently in emergency situations is generally achievable with appropriate training and prosthesis design, but failure to do so may occur in a minority of cases [1461].
Consequences	**Individual:** Impaired mobility or inability to perform emergency duties may increase risk of injury or inability to evacuate safely. Skin complications may lead to infection or require medical intervention. **Crew:** Reduced capacity of the affected seafarer may increase workload or risk for other crew members during emergencies. **Ship:** Potential compromise of safe operation if the seafarer cannot perform essential duties or respond effectively in emergencies.
Unmitigated risk	If the seafarer is unable to don the prosthesis independently or perform essential duties, the unmitigated risk is unacceptable for individual safety, crew safety, and ship operations.
Mitigation	• Comprehensive specialist assessment including prosthetist and occupational therapist input. • Training and regular drills to ensure the seafarer can don the prosthesis independently and promptly in emergencies. • Use of advanced prosthetic devices designed for durability and ease of use in maritime environments. • Management of underlying medical conditions to reduce risk of skin complications and other prosthesis-related issues. • Duty restrictions or modifications as necessary, particularly for safety-critical tasks. • Time-limited certification with regular re-evaluation.
Mitigated risk	With appropriate mitigation, including specialist support and training, the mitigated risk is generally acceptable, allowing the seafarer to safely perform routine and emergency duties, possibly with some restrictions on non-essential activities.

[1460] Sanders, J. E., & Fatone, S. (2019). Residual limb skin problems in prosthesis users: A review of the literature. Journal of Rehabilitation Research and Development, 56(1), 1–14

[1461] Highsmith MJ, Kahle JT, Miro RM, et al. Prosthetic training and functional outcomes in persons with lower limb amputation: A systematic review. J Rehabil Res Dev. 2016;53(3):299-312

	If mitigation is insufficient and essential duties cannot be performed, the mitigated risk remains unacceptable.
Recommendation	Any seafarer with a limb prosthesis must demonstrate the ability to fulfil emergency duties and independently don the prosthesis in emergency situations without assistance. Consideration must be given to any additional physical limitations or underlying medical conditions such as diabetes or peripheral vascular disease. Specialist input is essential, and a detailed individualised risk assessment must be completed prior to certification. Regular follow-up and reassessment are recommended to ensure ongoing fitness for service.

22.14 GENITO-URINARY CONDITIONS

N00, N17	Acute nephritis Renal failure, hypertension	P – Until resolved	Case-by-case assessment if any residual effects	Full recovery with normal kidney function and no residual damage
N03-05, N18-19	Sub-acute or chronic nephritis or nephrosis. Renal failure, hypertension.	T – Until investigated	R, L – Case-by-case assessment by specialist, based on renal function and likelihood of complications.	Case-by-case assessment by specialist, based on renal function and likelihood of complications.

22.14.1.1 N11 - ACUTE INTERSTITIAL NEPHRITIS (AIN)

Reviewed 2026-01-20

Significance	Acute interstitial nephritis (AIN) is an inflammatory condition primarily affecting the renal interstitium, often triggered by medications, infections, or systemic diseases. It can cause acute renal impairment, which may lead to renal failure and hypertension if not promptly recognised and managed. AIN is an important condition to consider in seafarers due to the potential for acute illness and long-term renal damage, which may impair physical capacity and the ability to perform safety-critical duties.
Possible medical incident(s)	• Acute renal impairment or failure requiring hospitalization or dialysis. • Hypertension secondary to renal dysfunction. • Electrolyte imbalances and fluid disturbances. • Potential progression to chronic kidney disease due to interstitial fibrosis. • Relapses require repeated or long-term corticosteroid therapy.
Likelihood	**The true incidence of AIN** is difficult to ascertain as definitive diagnosis requires renal biopsy, which is not always performed. However, medication-induced AIN accounts for approximately 70–75% of cases, with antibiotics responsible for 30–49% of these. Other causes include infections (4–10%), tubulointerstitial nephritis and uveitis (TINU) syndrome (5–10%), and systemic

	diseases such as sarcoidosis, Sjögren's syndrome, and systemic lupus erythematosus (10–20%) [1462]. **Common drug causes include** [1463]: • Antibiotics: Penicillins, cephalosporins, sulfonamides, rifampicin, quinolones (beta-lactams are the most frequent offenders). • Diuretics (various classes). • Non-steroidal anti-inflammatory drugs (NSAIDs), particularly in the elderly, often causing AIN with concurrent nephrotic syndrome. • Proton pump inhibitors. • Antihistamines such as cimetidine and ranitidine. • Other drugs: Allopurinol, phenindione, phenytoin, sulfadiazine, mesalazine, warfarin **Acute renal impairment failure:** Studies show that AIN can lead to acute kidney injury requiring hospitalisation, with some patients progressing to dialysis. Drug-induced AIN results in permanent renal insufficiency in approximately 36% of cases, with rates up to 56% in NSAID-induced AIN [1464]. **Hypertension secondary to renal dysfunction:** Hypertension is a recognized consequence of renal impairment in AIN, though exact incidence rates are less well quantified. It is part of the chronic sequelae resulting from renal fibrosis and loss of nephron function [1465]. **Electrolyte imbalances and fluid disturbances:** These are common in tubulointerstitial injury, including AIN, due to impaired renal solute transport and tubular dysfunction [1466] **Relapses requiring repeated or long-term corticosteroid therapy:** Some patients experience multiple relapses necessitating prolonged corticosteroid use, though precise incidence data are limited. Relapse risk is higher in cases with incomplete initial recovery or ongoing exposure to causative agents [1467].
Consequences	**Individual:** Acute illness with renal impairment may cause fatigue, fluid imbalance, and hypertension, impairing physical and cognitive function. Long-term consequences include chronic kidney disease and potential dialysis dependence in severe cases. **Crew:** Impaired individual capacity may compromise emergency response and safety-critical tasks.

[1462] Praga M, González E. Acute interstitial nephritis. Kidney Int. 2010;77(11):956-961
[1463] Rossert J. Drug-induced acute interstitial nephritis. Kidney Int. 2001;60(2):804-817. https://doi.org/10.1046/j.1523-1755.2001.060002804.x
[1464] Schwarz A, Krause P H, Kunzendorf U, Keller F. The outcome of acute interstitial nephritis: Risk factors for the transition from acute to chronic interstitial nephritis. Clinical Nephrology 2000;54(3):179-90
[1465] Sahutoglu T, Perazella M A. Update on Acute Tubulointerstitial Nephritis: Clinical Features, Immunologic Insights, and Diagnostic and Treatment Approaches. Kidney International Reports, 2025;10(6):1643-1656. ISSN 2468-0249. https://doi.org/10.1016/j.ekir.2025.03.050.
[1466] Krishnan, Namrata et al. Toxic Nephropathies of the Tubulointerstitium: Core Curriculum 2024. American Journal of Kidney Diseases,83(5):659-676.
[1467] Sahutoglu T, Perazella M A. Update on Acute Tubulointerstitial Nephritis: Clinical Features, Immunologic Insights, and Diagnostic and Treatment Approaches. Kidney International Reports, 2025;10(6):1643-1656. ISSN 2468-0249. https://doi.org/10.1016/j.ekir.2025.03.050.

	Ship: Risk to safe operation if the seafarer's health deteriorates or emergency evacuation is required.
Unmitigated risk	Without appropriate diagnosis and management, the unmitigated risk is unacceptable due to the potential for acute renal failure, systemic complications, and progression to chronic kidney disease, all of which impair fitness for service and safety.
Mitigation	• Prompt identification and withdrawal of offending agents. • Supportive care including fluid and electrolyte management. • Corticosteroid therapy when indicated, guided by nephrology consultation. • Regular monitoring of renal function and blood pressure, with at least annual review to detect progression. • Specialist nephrology input for diagnosis, treatment, and follow-up. • Temporary removal from duty until renal function stabilizes and symptoms resolve.
Mitigated risk	With timely and appropriate treatment, the mitigated risk is generally acceptable, as most patients experience significant recovery of renal function. However, a minority may have persistent renal impairment or require ongoing corticosteroid therapy, necessitating individualised assessment and possible restrictions.
Recommendation	Any seafarer diagnosed with AIN should undergo specialist nephrological evaluation and management. Medical certification should be deferred until renal function has stabilised and the individual is clinically well. Regular follow-up with renal function testing and blood pressure monitoring is essential to detect any progression of renal disease. An individualised risk assessment must consider the likelihood of relapse, residual renal impairment, and the impact on the seafarer's ability to perform routine and emergency duties safely.

22.14.1.2 N00 - ACUTE GLOMERULONEPHRITIS (GN)

Reviewed 2026-01-20

Significance	Glomerulonephritis (GN) refers to a group of diseases characterised by inflammatory injury to the glomeruli, often involving immune-mediated damage to the glomerular capillaries and basement membrane. The condition may affect part or all of the glomeruli and can present as renal-limited disease or as part of systemic disorders such as systemic lupus erythematosus (SLE) and rheumatoid arthritis. GN is likely underdiagnosed, with estimates suggesting that for every clinically apparent case, 5–10 patients have subclinical disease. It is a leading cause of end-stage renal disease (ESRD) in the US and Europe, ranking third after

	diabetes and hypertension, and is the most common cause of ESRD in developing countries due to infectious etiologies [1468] [1469] [1470].
Possible medical incident(s)	• Acute renal impairment or failure requires hospitalization or dialysis. • Hypertension secondary to renal dysfunction. • Hypervolaemia and fluid overload. • Proteinuria and haematuria leading to nephrotic or nephritic syndromes. • Progression to chronic kidney disease and ESRD. • Recurrence or relapse of glomerular inflammation.
Likelihood	**Post-streptococcal GN and IgA nephropathy prognosis:** Patients with typical post-streptococcal GN usually experience rapid resolution and have a low risk of progression to chronic kidney disease when adequately treated. Most achieve complete clinical recovery within weeks to months [1471]. **Membranoproliferative GN progression to ESRD:** Membranoproliferative GN often progresses to ESRD despite therapy, with up to 50–60% of untreated patients developing ESRD over 10–15 years. Recurrence rates are also high [1472]. **Wegener's granulomatosis (granulomatosis with polyangiitis) ESRD risk:** Approximately 20–25% of patients with Wegener's granulomatosis develop ESRD over 10–15 years if untreated [1473]. **Poor prognostic indicators** include severe renal dysfunction at presentation, heavy proteinuria, lack of response to treatment, and extensive fibrosis or glomerulosclerosis on biopsy are associated with poorer renal outcomes [1474]. **Recurrence rates** vary by underlying disease but require ongoing specialist monitoring [1475].
Consequences	**Individual:** Acute illness with renal impairment, hypertension, and fluid overload can impair physical and cognitive function. Long-term consequences include chronic kidney disease, dialysis dependence, and increased cardiovascular risk. **Crew:** Impaired capacity may compromise emergency response and safety-critical duties. **Ship:** Risk to safe operation if the seafarer's health deteriorates or emergency evacuation is required.

[1468] Yangtian J, Xing C, Tianyu Z, Changyu M, Congrong S, Bo Y. Global, regional, and national burden of acute glomerulonephritis from 1990 to 2021 and future trend predictions until 2036: a systematic analysis using the Global Burden of Disease Study 2021. Frontiers in Public Health, 2025;13. ISSN=2296-2565. DOI=10.3389/fpubh.2025.1593055
[1469] Couser WG. Primary glomerulonephritis. Lancet. 1999;353(9163):1509-1515. https://doi.org/10.1016/S0140-6736(99)00409-9
[1470] Floege J, Amann K. Primary glomerulonephritides. Lancet. 2016;387(10032):2036-2048. https://doi.org/10.1016/S0140-6736(15)00590-4
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[1472] Kazi AM. Glomerulonephritis. StatPearls. 2023. Link: https://www.ncbi.nlm.nih.gov/books/NBK560644/
[1473] UK Kidney Association Clinical Practice Guideline on immune-mediated glomerular diseases. https://www.ukkidney.org/sites/default/files/documents/FINAL%20VERSION_Treatment%20of%20immune%20mediated%20glomerular%20diseases%20in%20children%20guideline_291025_1.pdf
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[1475] Kazi AM. Glomerulonephritis. StatPearls. 2023.

Unmitigated risk	Without appropriate treatment and monitoring, the unmitigated risk is unacceptable due to the potential for acute renal failure, systemic complications, and progression to ESRD, all of which impair fitness for service and safety.
Mitigation	• Disease-specific treatment targeting underlying cause and immunosuppression were indicated. • Management of complications including hypertension, hypervolaemia, and hyperlipidaemia. • Regular specialist nephrology follow-up with monitoring of renal function, blood pressure, and disease markers. • Individualized risk assessment considering prognosis, treatment response, and access to medical care. • Temporary removal from duty during active disease or acute episodes.
Mitigated risk	With effective treatment and monitoring, the mitigated risk is generally acceptable, allowing the seafarer to safely perform duties with or without restrictions. Persistent renal impairment or recurrent disease may necessitate restrictions or unfitness declarations.
Recommendation	Seafarers with acute glomerulonephritis require specialist nephrological evaluation and ongoing management. Medical certification should be deferred until the individual is clinically stable with adequate renal function. An individualised risk assessment must consider the underlying aetiology, treatment requirements, prognosis, risk of recurrence, and potential impact on routine and emergency duties.

22.14.1.3 N17, N19 - RENAL FAILURE

Reviewed 2026-01-20

Significance	Chronic kidney disease (CKD) is defined by either pathological abnormalities of the kidney (e.g., proteinuria and/or haematuria) or a sustained reduction in glomerular filtration rate (GFR) below 60 ml/min/1.73 m² for more than three months, irrespective of the underlying cause [1476]. CKD is a common condition, often unrecognised until advanced stages, affecting an estimated 10% of the adult population worldwide [1477]. The incidence of CKD is expected to rise due to an ageing population and increasing prevalence of diabetes mellitus and hypertension, which account for approximately 40% and 33% respectively of patients requiring renal replacement therapy [1478]. Other causes include glomerular disorders such as focal segmental glomerulosclerosis, membranous nephropathy, lupus nephritis, amyloidosis, rapidly progressive glomerulonephritis, cystic kidney diseases (e.g., polycystic kidney disease), and obstructive uropathy.

[1476] KDOQI Advisory Board Members. Clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Part 4. Definition and classification of stages of chronic kidney disease. Am J Kidney Dis. 2002;39:S46-S75.
[1477] Hamer RA, El Nahas AM. The burden of chronic kidney disease. BMJ. 2006;332:563-564.
[1478] National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. United States Renal Data System, USRDS 2006 annual data report: Atlas of end-stage renal disease in the United States. 2006. http://www.usrds.org (last accessed 27 July 2014).

	Individuals with a history of acute kidney injury (AKI) are at increased risk of developing CKD or progressing to end-stage renal disease (ESRD).
Possible medical incident(s)	• Progressive loss of renal function leading to ESRD. • Complications including volume overload, hyperkalaemia, metabolic acidosis, anaemia, and secondary hyperparathyroidism. • Cardiovascular disease, which is the leading cause of mortality in CKD patients. • Requirement for renal replacement therapy (dialysis) or kidney transplantation.
Likelihood	CKD progression rates vary widely and are influenced by the underlying disease, comorbidities, and treatment adherence. While some patients experience slow progression over many years, others may rapidly progress to ESRD. Cardiovascular mortality often precedes ESRD in the majority of patients. **Progressive loss of renal function leadin to ESRD:** CKD is a progressive disorder, and without timely intervention, many patients will progress to end-stage renal disease (ESRD). The rate of progression varies widely depending on the underlying cause and management, but ESRD ultimately develops in a significant proportion of patients with advanced CKD [1479]. **Complications including volume overload, hyperkalaemia, metabolic acidosis, anaemia, and secondary hyperparathyroidism [1480]:** • Metabolic acidosis contributes to muscle wasting and bone disease and may accelerate CKD progression. • Anaemia is common in CKD and is associated with increased morbidity and mortality, particularly cardiovascular complications. • Secondary hyperparathyroidism develops as a consequence of mineral metabolism disturbances in CKD. **Cardiovascular disease (CVD), the leading cause of mortality in CKD patients:** Patients with CKD have a markedly increased risk of cardiovascular disease, which accounts for the majority of deaths in this population. The risk of death and need for kidney replacement therapy are significantly elevated in CKD patients with CVD [1481]. **Requirement for renal replacement therapy (dialysis) or kidney transplantation:** The need for renal replacement therapy increases as CKD progresses, with many patients eventually requiring dialysis or transplantation to survive. The timing depends on the rate of progression and presence of complications [1482].

[1479] Hashmi MF et al. End-Stage Renal Disease. StatPearls. 2023. Link: https://www.ncbi.nlm.nih.gov/books/NBK499861/

[1480] Bello AK, Alrukhaimi M, Ashuntantang GE, Basnet S, Rotter RC, Douthat WG, Kazancioglu R, Köttgen A, Nangaku M, Powe NR, White SL, Wheeler DC, Moe O. Complications of chronic kidney disease: current state, knowledge gaps, and strategy for action. Kidney Int Suppl (2011). 2017 Oct;7(2):122-129. doi: 10.1016/j.kisu.2017.07.007. Epub 2017 Sep 20. PMID: 30675426; PMCID: PMC6341007.

[1481] Virani SS et al. Cardiovascular Disease in Chronic Kidney Disease. Circulation. 2021.

[1482] Medscape. End-Stage Kidney Disease (ESKD) Clinical Presentation. 2025.
Link: https://emedicine.medscape.com/article/2500089-clinical

Consequences	**Individual:** Progressive renal impairment with associated metabolic and cardiovascular complications, reduced physical capacity, and potential need for dialysis or transplantation. **Crew:** Impaired ability to perform safety-critical and emergency duties due to fatigue, comorbidities, or treatment schedules. **Ship:** Potential impact on safe operation if the seafarer's health deteriorates or emergency evacuation is required.
Unmitigated risk	Without early diagnosis and appropriate management, the unmitigated risk is unacceptable due to the high likelihood of progressive renal failure, complications, and impaired fitness for service.
Mitigation	• Early identification and management of CKD and its risk factors, including optimal glycaemic control in diabetes and blood pressure management. • Treatment of complications such as volume overload, electrolyte imbalances, anaemia, and bone mineral disorders. • Regular monitoring by nephrology specialists with individualized follow-up schedules. • Patient education and adherence to treatment plans. • Consideration of duty restrictions or time-limited certification based on disease stage and functional capacity.
Mitigated risk	With appropriate specialist management and monitoring, the mitigated risk is generally acceptable, allowing the seafarer to perform duties safely, possibly with restrictions. Persistent advanced disease or complications may render the mitigated risk unacceptable, necessitating unfitness declarations.
Recommendation	Seafarers with CKD require specialist nephrological evaluation and ongoing management. Medical certification should be based on individualised risk assessment considering disease stage, treatment requirements, complications, and functional capacity. Regular re-evaluation is essential to ensure continued fitness for duty and timely identification of disease progression or complications.

22.14.2 RENAL OR URETERIC CALCULUS

N20-23	Renal or ureteric calculus Pain from renal colic	T – Until investigated and treated P – Recurrent stone formation	R – Consider if concern about ability to work in tropics or under high temperature conditions. Case-by-case assessment for near-coastal waters.	Case-by-case assessment by specialist with normal urine and renal function without recurrence.

22.14.2.1 N20-23 – UROLITHIASIS

Reviewed 2026-01-21

Significance	Renal and ureteric calculi (kidney and ureter stones) represent a common urological condition with a lifetime prevalence estimated between 5% and 12%, varying by age, sex (male:female ratio approximately 2–3:1 [1483]), and geographical factors [1484] [1485]. The incidence peaks between the fourth and sixth decades of life [1486], and is notably higher in hot, arid, or dry climates, which are relevant considerations for seafarers operating in such environments. The condition is significant to maritime occupational health due to the potential for acute renal colic episodes, which can cause severe pain and incapacitation, thereby impairing the individual's ability to perform safety-critical tasks on board. Furthermore, complications such as urinary tract obstruction, infection, or acute renal failure may pose risks not only to the affected individual's health but also to the safety of other crew members and the safe operation of the vessel.
Possible medical incident(s)	• Acute renal colic causing severe pain and sudden incapacitation. • Urinary tract infection or urosepsis secondary to obstruction. • Acute renal failure due to obstruction or infection. • Recurrent stone formation leading to repeated episodes of pain and medical intervention. • Silent obstruction causing progressive renal damage without overt symptoms. • These incidents may lead to impaired cognitive or physical function, reduced alertness, or inability to perform assigned duties, particularly in safety-critical roles such as navigation, engineering, or deck operations.
Likelihood	Most people (80%) of patients with nephrolithiasis form calcium stones – other types include uric acid, struvite and cystine stones. Risk factors for stone formation include: • Dietary factors eg high animal protein intake, high sodium/low calcium/high oxalate intake and low fluid intake

[1483] Hiatt RA, Dales LG, Friedman GD, et al. Frequency of urolithiasis in a prepaid medical care program. Am J Epidemiol. 1982;115:255-265.
[1484] Norlin A, Lindell B, Granberg PO, et al. Urolithiasis. A study of its frequency. Scand J Urol Nephrol. 1976;10:150-153.
[1485] Scales CD Jr, Smith AC, Hanley JM, et al. Prevalence of kidney stones in the United States. Eur Urol. 2012;62:160-165.
[1486] Marshall V, White RH, De Saintonage M, et al. The natural history of renal and ureteric calculi. Br J Urol. 1975;47:117-124.

	• History of previous stones – the rate of stone recurrence is quoted at 10 – 30% at 3 – 5 years with idiopathic calcium oxalate stones[1487] [1488]. Much higher rates of recurrence (15% at one year, 35 – 40% at 5 years and 50% at 10 years) have been found in a separate study[1489] although this may be due to differences in imaging. • Positive family history[1490] • Enhanced enteric oxalate absorption eg gastric bypass surgery, bariatric surgery, short bowel syndrome[1491] • Frequent upper urinary tract infections and the use of medication that may crystallize in the urine[1492] • Hypertension - the risk of stone formation is increased two fold[1493] **The likelihood of a first renal or ureteric calculus** episode varies with demographic and environmental factors. Stone formation is uncommon before age 20 and peaks in middle age [1494]. **Recurrence rates for idiopathic calcium oxalate stones** are approximately 10–30% within 3–5 years, with some studies reporting up to 50% recurrence at 10 years [1495] [1496] [1497]. For **individuals with a history of stones, recurrence likelihood** is moderate to high (5–10% or greater annually), especially in those with risk factors such as family history, metabolic abnormalities, or prior stone composition of cystine, uric acid, or struvite [1498]. **Asymptomatic stones** have a 28–49% chance of becoming symptomatic within 2.5 to 5 years, with approximately 17–50% requiring surgical intervention [1499]. **The following groups are considered to be at moderate to high risk for stone recurrence:** • Middle-aged, white males with a family history of stones • African Americans, a group in which stone formation is less common[1500] • Patients with chronic diarrheal states and/or malabsorption, history of bowel surgery or bariatric surgery, pathologic skeletal fractures, osteoporosis, urinary tract infection, and/or gout • Those with stones known to be composed of cystine, uric acid, or struvite

[1487] Hiatt RA, Ettinger B, Caan B, Quesenberry CP Jr, Duncan D, Citron JT. Randomized controlled trial of a low animal protein, high fiber diet in the prevention of recurrent calcium oxalate kidney stones. Am J Epidemiol. 1996;144(1):25.
[1488] Kocvara R, Plasgura P, Petrík A, LouzenskýG, BartonícковáK, Dvorácek J. A prospective study of nonmedical prophylaxis after a first kidney stone. BJU Int. 1999;84(4):393.
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[1490] Curhan GC, Willett WC, Rimm EB, Stampfer MJ. Family history and risk of kidney stones. J Am Soc Nephrol. 1997;8(10):1568.
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[1493] Cappuccio FP, Strazzullo P, Mancini M. Kidney stones and hypertension: population based study of an independent clinical association. BMJ. 1990;300(6734):1234.
[1494] Leslie SW et al., "Renal Calculi, Nephrolithiasis," StatPearls, 2024. NCBI Bookshelf
[1495] EAU guidelines on urolithiasis. European Association of Urology 2025.
[1496] Trinchieri A., "A Prospective Study of Recurrence Rate and ...," J Urol, 1999. AUA Journals
[1497] Shastri S. et al., "Kidney Stone Pathophysiology, Evaluation and Management," AJKD, 2023. AJKD
[1498] Wang K, Ge J, Han W, Wang D, Zhao Y, Shen Y, Chen J, Chen D, Wu J, Shen N, Zhu S, Xue B, Xu X. Risk factors for kidney stone disease recurrence: a comprehensive meta-analysis. BMC Urol. 2022 Apr 19;22(1):62. doi: 10.1186/s12894-022-01017-4. PMID: 35439979; PMCID: PMC9017041.
[1499] Leslie SW et al., "Renal Calculi, Nephrolithiasis," StatPearls, 2024. NCBI Bookshelf
[1500] Sarmina I, Spirnak JP, Resnick MI. Urinary lithiasis in the black population: an epidemiological study and review of the literature. J Urol. 1987;138(1):14.

	• Obese patients, or patients with diabetes, who have an increased incidence of uric acid stones[1501] [1502] **Asymptomatic nephrolithiasis** It is common to find that people have asymptomatic kidney stone(s) and several studies have examined the natural history of asymptomatic calculi: • A cohort of 110 patients with 160 asymptomatic kidney stones was followed with active surveillance (using renal ultrasound performed every 6 to 12 months)[1503]. During a mean follow-up of 3.4 years, 28% of stones produced symptoms and 17% required surgery for these symptoms; an additional 3% caused silent obstruction that required intervention. Lower pole stones were less likely to cause symptoms or pass spontaneously. • Another study monitored 107 such patients for a mean of 32 months[1504]. The likelihood of developing symptoms was approximately 32% at 2.5 years and 49% at 5 years; the risk was lowest in patients who had no history of previous stones. Roughly 50% of symptomatic patients required a procedure (such as shockwave lithotripsy) for removal of the stone, while the remaining symptomatic patients passed the stone spontaneously. **Residual stones following shockwave lithotripsy or percutaneous stone removal** A number of studies have found that such patients are at increased risk for symptomatic stone episodes. However, these investigations also suggest that appropriate medical stone management can significantly reduce recurrent stone formation or growth of existing stones[1505] [1506] [1507]. Thus, certain asymptomatic patients should undergo evaluation and treatment, based upon their occupation or complexity, but the decision to do this in a person should be made on an individual basis with full awareness of the limited access to medical care and the impact an acute episode may have on the person, his colleagues and the ship.
Consequences	An acute stone episode may result in sudden severe pain, nausea, vomiting, and functional incapacitation, potentially compromising the individual's ability to safely perform duties on the bridge, deck, or engine room. In safety-critical roles, this may jeopardise not only the individual's health but also the safety of colleagues and vessel operations. Complications such as urosepsis or acute renal failure require urgent medical intervention and may necessitate evacuation or emergency care, which may be challenging at sea.

[1501] Pak CY, Sakhaee K, Moe O, Preminger GM, Poindexter JR, Peterson RD, Pietrow P, Ekeruo W. Biochemical profile of stone-forming patients with diabetes mellitus. Urology. 2003;61(3):523.
[1502] Ekeruo WO, Tan YH, Young MD, Dahm P, Maloney ME, Mathias BJ, Albala DM, Preminger GM. Metabolic risk factors and the impact of medical therapy on the management of nephrolithiasis in obese patients. J Urol. 2004;172(1):159
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[1504] Glowacki LS, Beecroft ML, Cook RJ, Pahl D, Churchill DN. The natural history of asymptomatic urolithiasis. J Urol. 1992;147(2):319.
[1505] Fine JK, Pak CY, Preminger GM. Fine JK, Pak CY, Preminger GM. J Urol. 1995;153(1):27.
[1506] Maloney ME, Springhart WP, Marguet CG, et AL. Appropriate medical treatment after percutaneous nephrolithotomy can control active stone disease in the presence of residual calculi. Journal of Urology. 2004; 171:302.
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	Recurrent episodes may lead to chronic kidney damage or loss of renal function, further impacting fitness for duty.
Unmitigated risk	Without appropriate investigation and treatment, the unmitigated risk of incapacitating renal colic or complications is considered: **Individual:** Unacceptable, due to potential sudden incapacitation and health deterioration. **Crew:** Unacceptable, as sudden incapacitation may compromise team safety and emergency response. **For the Ship:** Unacceptable, given the risk of impaired operation or emergency evacuation.
Mitigation	Mitigating measures include: • Prompt specialist assessment and investigation following any episode of renal colic. • Adequate analgesia and hydration during acute episodes. • Medical management to reduce recurrence risk, including dietary advice (e.g., adequate fluid intake, reduced animal protein and sodium intake), treatment of underlying metabolic abnormalities, and management of comorbidities such as hypertension. • Surgical or minimally invasive interventions (shockwave lithotripsy, ureteroscopy, percutaneous nephrolithotomy) for symptomatic or high-risk stones. • Regular surveillance for asymptomatic stones, particularly in individuals with risk factors or safety-critical roles. • Restriction or limitation of duties, sailing area, or certificate validity as necessary
Mitigated risk	Following appropriate mitigation, the risk assessment is: • **Acceptable** for most individuals who have undergone specialist evaluation, treatment, and lifestyle modification, with no recent recurrence and normal renal function. These individuals may be fit for service with or without restrictions on certificate duration or sailing area. • **Acceptable with restrictions** for those with recurrent stones or residual calculi requiring ongoing surveillance or limited duties. • **Unacceptable** if recurrent episodes persist despite treatment, or if complications such as impaired renal function or frequent incapacitating episodes occur. In such cases, temporary or permanent unfitness for service may be indicated.
Recommendation	• All seafarers with a history of renal or ureteric calculi should undergo specialist assessment to evaluate recurrence risk and complications. • Lifestyle advice and management of underlying risk factors (e.g., hypertension) are essential. • Asymptomatic stones may be managed with active surveillance if small, non-obstructive, and non-infected, with consideration of time-limited or restricted certification. • Individuals with symptomatic, recurrent, or complex stone disease should be considered for minimally invasive stone removal and metabolic evaluation.

	• Special consideration should be given to seafarers in safety-critical roles or those working in hot climates, where dehydration may precipitate stone formation. • Cases requiring restrictions beyond standard criteria should be referred to the appellate body with comprehensive medical documentation. • Urine sieving and stone analysis should be encouraged to guide management.

22.14.3 PROSTATIC ENLARGEMENT/URINARY OBSTRUCTION

N33, N40	Prostatic enlargement/urinary obstruction Acute retention of urine	T – Until investigated and treated P – If not remediable	R – Case-by-case assessment for near-coastal duties.	Successfully treated. Low likelihood of recurrence.

22.14.3.1 N33 - ACUTE RETENTION OF URINE (ARU)

Reviewed 2026-01-21

Significance	Acute retention of urine (ARU) is defined as the sudden inability to voluntarily pass urine and constitutes the most common urological emergency[1508]. It predominantly affects men, usually secondary to benign prostatic hyperplasia (BPH), with incidence increasing with age. ARU is rare in women, with a male-to-female incidence ratio of approximately 13:1 and an estimated incidence of 3 cases per 100,000 women annually [1509]. The condition is significant in the maritime context due to the potential for sudden incapacitation, pain, and complications that may impair the individual's ability to perform safety-critical tasks on board. Furthermore, ARU may indicate underlying pathology requiring specialist assessment and management to prevent recurrence and complications.
Possible medical incident(s)	• Sudden urinary retention causing severe discomfort, pain, and functional incapacitation. • Urinary tract obstruction, which may be acute or chronic, unilateral or bilateral, partial or complete. • Secondary complications including urinary tract infection, urosepsis, and progression to end-stage renal disease if untreated. • Underlying causes such as BPH, prostate cancer, bladder tumours, renal calculi, or less common anatomical abnormalities or iatrogenic injury.
Likelihood	The incidence of ARU increases with advancing age in men, correlating with the prevalence of BPH. It is uncommon in younger individuals and rare in women. The likelihood of recurrence depends on the underlying cause and adequacy of treatment. Cases secondary to reversible causes (e.g., urinary tract infection,

[1508] Marshall JR, Haber J, Josephson EB. An evidence-based approach to emergency department management of acute urinary retention. Emerg Med Pract. 2014;16(1):1.
[1509] Klarskov P, Andersen JT, Asmussen CF, Brenøe J, Jensen SK, Jensen IL, Lund P, Schultz A, Vedel T. Acute urinary retention in women: a prospective study of 18 consecutive cases. Scand J Urol Nephrol. 1987;21(1):29.

	medication effects) have a low likelihood of recurrence following resolution. Cases due to BPH or unknown aetiology require specialist evaluation to estimate recurrence risk.
Consequences	An episode of ARU results in sudden incapacitation due to pain and inability to void, which may compromise the individual's capacity to perform duties safely. Untreated urinary obstruction can lead to urinary tract infection, urosepsis, and acute kidney injury, with potential progression to chronic kidney disease or end-stage renal failure. These complications pose significant risks to the individual's health and may impact crew safety and vessel operations.
Unmitigated risk	Without appropriate investigation and treatment, the unmitigated risk is considered: **Individual:** Unacceptable, due to risk of sudden incapacitation and serious complications. **Crew:** Unacceptable, as incapacitation may impair emergency response and safety-critical operations. **Ship:** Unacceptable, given potential operational disruption and medical evacuation needs.
Mitigation	Mitigating measures include: • Prompt medical evaluation to determine and treat the underlying cause of ARU. • Catheterization to relieve acute obstruction, particularly in bilateral obstruction. • Specialist assessment and management of underlying conditions such as BPH, prostate cancer, or bladder tumours. • Ongoing monitoring and treatment tailored to the cause, including surgical or medical interventions as appropriate. • Individualized risk assessment of fitness to work at sea, incorporating recurrence risk and access to medical care. • Restriction of duties or sailing area as necessary, in accordance with regulatory guidelines and specialist advice.
Mitigated risk	Following appropriate treatment and specialist management, the mitigated risk is generally: • **Acceptable** for individuals with reversible causes or successfully treated BPH, with low likelihood of recurrence. • **Acceptable with restrictions** for those with ongoing or incompletely resolved obstruction requiring monitoring or treatment. • **Unacceptable** if obstruction persists or complications develop despite treatment, indicating temporary or permanent unfitness for service.
Recommendation	• All individuals with a history of ARU should undergo thorough investigation to identify the underlying cause. • Cases secondary to reversible causes require confirmation of resolution before return to duty. • Those with BPH or unknown aetiology should receive specialist assessment and management, including consideration of recurrence risk. • Regular monitoring and follow-up are essential to prevent complications.

	Individualized fitness assessments should consider the nature of duties, risk of recurrence, and availability of medical care at sea.

22.14.3.2 N40 - BENIGN PROSTATIC HYPERPLASIA (BPH)

Reviewed 2026-01-21

Significance	Benign prostatic hyperplasia (BPH) is a common condition affecting men, with prevalence increasing markedly with age. Although variations in definitions have complicated prevalence comparisons, it is estimated that BPH affects approximately 8% of men aged 31–40 years, rising to around 80% in men over 80 years of age [1510] [1511]. Ethnic and racial factors influence the severity and clinical course of BPH. For example, Black men under 65 years are more likely to require surgical intervention compared to their White counterparts, while Asian men demonstrate the lowest risk of symptoms, diagnosis, and surgery among studied populations[1512] [1513]. The condition is significant in the maritime occupational context due to its potential to cause lower urinary tract symptoms (LUTS), acute urinary retention, urinary tract infections, and renal insufficiency, all of which may impair the individual's ability to perform safety-critical duties on board.
Possible medical incident(s)	• Lower urinary tract symptoms including urinary frequency, urgency, nocturia, and weak stream. • Acute urinary retention requiring urgent catheterization or intervention. • Urinary tract infections secondary to bladder outlet obstruction. • Renal insufficiency due to chronic obstruction. • Overactive bladder symptoms causing urgency and incontinence.
Likelihood	The clinical progression of BPH occurs in approximately 20% of patients [1514]. The likelihood of complications is generally low but includes: • Acute urinary retention in approximately 2.5% of patients over a 5-year period [1515]. • Requirement for invasive therapy (e.g., surgery) in approximately 6% of patients within 5 years [1516].

[1510] Bortnick E, Brown C, Simma-Chiang V, Kaplan SA. Modern best practice in the management of benign prostatic hyperplasia in the elderly. Ther Adv Urol. 2020 May 27;12:1756287220929486. doi: 10.1177/1756287220929486. PMID: 32547642; PMCID: PMC7273551.
[1511] Lim KB. Epidemiology of clinical benign prostatic hyperplasia. Asian J Urol. 2017 Jul;4(3):148-151. doi: 10.1016/j.ajur.2017.06.004. Epub 2017 Jun 9. PMID: 29264223; PMCID: PMC5717991.
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[1515] Muruganandham K, Dubey D, Kapoor R. Acute urinary retention in benign prostatic hyperplasia: Risk factors and current management. Indian J Urol. 2007 Oct;23(4):347-53. doi: 10.4103/0970-1591.35050. PMID: 19718286; PMCID: PMC2721562.
[1516] Nazarko L. Benign prostatic hyperplasia: minimally invasive and invasive treatment. Urology & Continence Care Today. January 2026.

	Treatment response varies by modality: alpha-blockers typically improve symptoms within 1–2 weeks, while 5-alpha-reductase inhibitors may take 4–6 months to show benefit. Post-surgical evaluation is recommended at 6 weeks.
Consequences	BPH-related symptoms and complications may cause discomfort, functional impairment, and sudden incapacitation (e.g., acute urinary retention). Such events can compromise the individual's ability to safely perform duties, particularly in safety-critical roles. Untreated obstruction may lead to urinary tract infections, renal impairment, and increased risk of acute medical emergencies at sea.
Unmitigated risk	Without appropriate management, the unmitigated risk is considered: **Individual:** Potentially unacceptable due to risk of acute retention and complications. **Crew:** Potentially unacceptable if sudden incapacitation occurs during safety-critical tasks. **Ship**: Potentially unacceptable due to risk of operational disruption and emergency medical evacuation.
Mitigation	Mitigating measures include: • Regular clinical monitoring of symptoms and treatment efficacy. • Medical management with alpha-blockers, 5-alpha-reductase inhibitors, or combination therapy as indicated. • Surgical intervention where medical therapy is insufficient or complications arise. • Screening for prostate cancer in appropriate age groups (40–75 years) on an individual basis. • Individualized risk assessment incorporating specialist input regarding fitness to work at sea. • Restriction of duties or sailing area as necessary.
Mitigated risk	With appropriate treatment and monitoring, the mitigated risk is generally: • Acceptable for most individuals with well-controlled symptoms and no significant complications. • Acceptable with restrictions for those requiring ongoing invasive therapy or with recurrent complications. • Unacceptable if symptoms are uncontrolled or complications persist despite treatment, indicating temporary or permanent unfitness for service.

22.14.4 GYNAECOLOGICAL CONDITIONS

N70-98	Gynaecological conditions – heavy vaginal bleeding, severe menstrual pain, endometriosis, prolapse of genital organs or other. Impairment from pain or bleeding.	T – If impairing or investigation needed to determine cause and remedy it	R – Case-by-case assessment if condition is likely to require treatment on voyage or affect working capacity	Fully resolved with low likelihood of recurrence

22.14.4.1 N93.9 - ABNORMAL UTERINE BLEEDING (AUB)

Reviewed 2026-01-21

Significance	Abnormal uterine bleeding (AUB) is defined as menstrual bleeding that is abnormal in volume, duration, or timing. It is a common gynaecological complaint, accounting for approximately one-third (33%) of outpatient visits to gynaecologists [1517]. This condition predominantly affects women of reproductive age (18–50 years), with a reported prevalence of approximately 53 per 1,000 women in a US cohort study [1518]. The significance of AUB lies in its impact on quality of life, productivity, and, critically, the ability of affected women to manage symptoms effectively while performing routine and emergency duties at sea.
Possible medical incident(s)	• Excessive or prolonged menstrual bleeding leading to anaemia or fatigue. • Intermenstrual bleeding causing unpredictability and distress. • Severe dysmenorrhoea (menstrual pain) impairing functional capacity. • Underlying pathology such as fibroids, polyps, endometrial hyperplasia, or coagulopathies. • Need for urgent medical intervention if bleeding is severe or associated with haemodynamic instability.
Likelihood	AUB is common in women of reproductive age, with prevalence estimates varying by population and diagnostic criteria. The likelihood of episodes requiring medical intervention depends on the underlying cause and severity of symptoms.
Consequences	Uncontrolled or severe AUB may result in significant blood loss, anaemia, and fatigue, impairing physical and cognitive function. This may compromise the individual's ability to safely perform duties, particularly in safety-critical roles. Unpredictable bleeding episodes may also affect hygiene management and psychological well-being on board.
Unmitigated risk	Without appropriate investigation and management, the unmitigated risk is considered: **Individual:** Potentially unacceptable due to risk of incapacitation and complications such as anaemia.

[1517] Spencer CP, Whitehead MI. Endometrial assessment re-visited. Br J Obstet Gynaecol. 1999 Jul;106(7):623-32.
[1518] Kjerulff KH, Erickson BA, Langenberg PW. Chronic gynecological conditions reported by US women: findings from the National Health Interview Survey, 1984 to 1992. Am J Public Health. 1996 Feb;86(2):195-9.

	Crew: Potentially unacceptable if sudden incapacitation or distraction occurs during critical operations. **Ship:** Potentially unacceptable due to risk of impaired performance and need for medical evacuation.
Mitigation	Mitigating measures include: • Thorough investigation to determine the underlying cause of AUB, including history, examination, and appropriate investigations. • Medical management tailored to the cause, such as hormonal therapy, antifibrinolytics, or treatment of coagulopathies. • Surgical intervention if indicated (e.g., polypectomy, myomectomy, endometrial ablation). • Regular monitoring and follow-up to assess treatment efficacy and symptom control. • Individualized risk assessment considering the likelihood of recurrence and impact on work capacity. • Temporary restriction from duty during active bleeding episodes or investigations.
Mitigated risk	Following appropriate treatment and monitoring, the mitigated risk is generally: • **Acceptable** for women with controlled symptoms and no significant complications. • **Acceptable with restrictions** for those with recurrent or severe symptoms requiring ongoing management. • **Unacceptable** if symptoms are uncontrolled or complications arise despite treatment, indicating temporary or permanent unfitness for service.
Recommendation	All women with a history of AUB should undergo comprehensive evaluation to identify the underlying cause. Management plans should be individualised, with specialist input as required. Consideration should be given to the nature of duties, symptom severity, and access to medical care at sea.

22.14.4.2 N94.4 – DYSMENNORHOEA

Reviewed 2026-01-21

Significance	Dysmenorrhoea, defined as painful menstruation, is estimated to affect between 50% and 90% of women of reproductive age, with incidence decreasing as age increases [Reference]. Severe dysmenorrhoea can significantly interfere with daily activities and is a recognised cause of absenteeism from work and other commitments. Although often idiopathic, several risk factors have been identified, including age under 30 years, body mass index (BMI) below 20, smoking, early menarche (before 12 years), longer menstrual cycles or duration of bleeding, and a history of sexual assault [Reference].
Possible medical incident(s)	• Severe menstrual pain causing functional impairment. • Underlying pelvic pathology such as endometriosis, pelvic inflammatory disease, or uterine fibroids.

	• Medication side effects, including drowsiness or gastrointestinal symptoms from analgesics.
Likelihood	Dysmenorrhoea is highly prevalent among reproductive-aged women, with a wide range of severity. The likelihood of severe symptoms necessitating medical intervention varies according to individual risk factors and underlying pathology.
Consequences	Severe dysmenorrhoea may impair the individual's ability to perform routine and emergency duties, particularly in safety-critical roles. Pain and associated symptoms can reduce concentration, physical capacity, and overall work performance. Medication side effects may further impact alertness and function.
Unmitigated risk	Without adequate management, the unmitigated risk is considered: **Individual:** Potentially unacceptable due to pain-related incapacitation and reduced functional capacity. **Crew:** Potentially unacceptable if incapacitation occurs during critical operations. **Ship:** Unacceptable due to risk of impaired performance and safety.
Mitigation	Mitigating measures include: • Comprehensive clinical assessment including history, examination, and investigations to exclude significant pelvic pathology. • Adequate pain management tailored to the individual, including non-steroidal anti-inflammatory drugs (NSAIDs), hormonal therapies, or other analgesics as appropriate. • Consideration of medication side effects and ensuring sufficient analgesic supply for the duration of the contract. • Individualized risk assessment of fitness to work at sea, considering symptom severity and impact on duties.
Mitigated risk	With appropriate treatment and monitoring, the mitigated risk is generally: • **Acceptable** for most women with controlled symptoms and no significant underlying pathology. • **Acceptable with restrictions** for those with recurrent or severe symptoms requiring ongoing management. • **Unacceptable** if symptoms are uncontrolled or significant pathology is present, indicating temporary or permanent unfitness for service.
Recommendation	• Women presenting with severe dysmenorrhoea should undergo thorough evaluation to exclude underlying pelvic pathology. • Treatment plans should be individualized and include consideration of the impact on work capacity and medication side effects.

22.14.4.3 N80 – ENDOMETRIOSIS

Reviewed 2026-01-21

Significance	Endometriosis is characterised by the presence of endometrial glands and stroma outside the uterine endometrial cavity and myometrium. These ectopic endometrial implants are most commonly located within the pelvis but may occur at extra-pelvic sites throughout the body. The condition predominantly affects women during their active reproductive years, typically between 25 and 35 years of age, and is uncommon in premenarchal girls and postmenopausal women not receiving oestrogen therapy [1519]. The prevalence of endometriosis is challenging to ascertain due to the heterogeneity of symptoms and diagnostic criteria; however, it is estimated to affect up to 50% of women undergoing laparoscopy for pelvic pain or infertility [1520] [1521].
Possible medical incident(s)	• Chronic pelvic pain and dysmenorrhoea. • Dyspareunia (painful intercourse). • Bowel symptoms including constipation, diarrhoea, and bowel pain. • Urinary symptoms such as dysuria and other urinary tract complaints. • Infertility. • Ovarian cysts or masses (endometriomas).
Likelihood	In a survey of 940 women with endometriosis, approximately 75% of symptomatic patients experienced pelvic pain and/or dysmenorrhea[1522]. Other presenting symptoms or findings were: • Dysmenorrhea (79%) • Pelvic pain (69%) • Dyspareunia (45%) • Bowel upset (eg, constipation, diarrhea) (36%) • Bowel pain (29%) • Infertility (26%) • Ovarian mass/tumor (20%) • Dysuria (10%) • Other urinary problems (6%) Endometriosis is a chronic and relapsing condition and its natural history, untreated shows that at 6 – 12 months after diagnostic laparoscopy[1523] [1524] • Disease regression in 22–29% of cases • Disease progression in 29–45% • Stable disease in 33–42%

[1519] Olive DL, Schwartz LB. Endometriosis. N Engl J Med. 1993;328(24):1759.
[1520] Sangi-Haghpeykar H, Poindexter AN 3rd. Epidemiology of endometriosis among parous women. Obstet Gynecol. 1995;85(6):983.
[1521] Missmer SA, Hankinson SE, Spiegelman D, Barbieri RL, Marshall LM, Hunter DJ. Incidence of laparoscopically confirmed endometriosis by demographic, anthropometric, and lifestyle factors. Am J Epidemiol. 2004;160(8):784.
[1522] Sinaii N, Plumb K, Cotton L, Lambert A, Kennedy S, Zondervan K, Stratton P. Differences in characteristics among 1,000 women with endometriosis based on extent of disease. Fertil Steril. 2008;89(3):538.
[1523] Sutton CJ, Pooley AS, Ewen SP, Haines P. Follow-up report on a randomized controlled trial of laser laparoscopy in the treatment of pelvic pain associated with minimal to moderate endometriosis. Fertil Steril. 1997;68(6):1070.
[1524] Abbott J, Hawe J, Hunter D, Holmes M, Finn P, Garry R. Laparoscopic excision of endometriosis: a randomized, placebo-controlled trial. Fertil Steril. 2004;82(4):878.

Consequences	Endometriosis is a chronic, relapsing condition that can cause significant pain, functional impairment, and infertility. Symptoms may interfere with the individual's ability to perform routine and emergency duties, particularly in safety-critical roles. The unpredictable nature of symptom exacerbations may affect work capacity and quality of life.
Unmitigated risk	Without appropriate management, the unmitigated risk is considered: **Individual:** Potentially unacceptable due to chronic pain, functional impairment, and risk of infertility. **Crew:** Potentially unacceptable if incapacitation occurs during critical operations. **Ship:** Potentially unacceptable due to risk of impaired performance and need for medical intervention.
Mitigation	Mitigating measures include: • Individualized treatment plans incorporating medical therapy (e.g., hormonal suppression, analgesics) and/or surgical intervention as indicated. • Symptom management tailored to the primary complaints of the individual. • Regular follow-up and monitoring based on clinical need rather than fixed protocols. • Individualized risk assessment of fitness to work at sea, considering symptom severity and impact on duties.
Mitigated risk	With appropriate treatment and monitoring, the mitigated risk is generally: • Acceptable for individuals with well-controlled symptoms and stable disease. • Acceptable with restrictions for those with recurrent or severe symptoms requiring ongoing management. • Unacceptable if symptoms are uncontrolled or complications arise despite treatment, indicating temporary or permanent unfitness for service.
Recommendation	• Women diagnosed with endometriosis should receive comprehensive evaluation and individualized management plans. • Specialist input is recommended to optimize symptom control and assess fitness for duty. • Follow-up should be tailored to the individual's clinical course and primary complaints.

22.14.4.4 D25 - UTERINE LEIOMYOMAS (FIBROIDS)

Reviewed 2026-01-21

Significance	Uterine leiomyomas, commonly known as fibroids, are benign smooth muscle tumours of the uterus and represent the most common pelvic tumour in women [Reference]. A hysterectomy study reported the presence of myomas in approximately 77% of uterine specimens examined [1525]. The crude annual incidence of uterine fibroids is estimated at approximately 1%, with increased incidence associated with advancing age, Black ethnicity (threefold increase), elevated body mass index (BMI), history of infertility, and current alcohol consumption [1526]. Fibroids typically present with symptoms such as heavy or prolonged menstrual bleeding, pelvic pressure or pain, and reproductive dysfunction.
Possible medical incident(s)	• Heavy or prolonged menstrual bleeding leading to anaemia. • Pelvic pain or pressure symptoms. • Reproductive dysfunction including infertility or pregnancy complications. • Potential for acute complications such as torsion or degeneration of fibroids (rare).
Likelihood	The natural history of fibroids in premenopausal women is variable. Prospective studies indicate that between 7% and 40% of fibroids may regress spontaneously over a period of 6 months to 3 years [1527] [1528].
Consequences	Symptoms related to fibroids, particularly heavy menstrual bleeding and pelvic discomfort, may impair physical capacity and quality of life, potentially affecting the individual's ability to perform routine and emergency duties on board. Reproductive dysfunction may also have implications for family planning and psychological well-being.
Unmitigated risk	Without appropriate management, the unmitigated risk is considered: **Individual:** Potentially unacceptable due to symptom burden and risk of complications. **Crew**: Potentially unacceptable if incapacitation occurs during critical operations. **Ship:** Potentially unacceptable due to risk of impaired performance and need for medical intervention.
Mitigation	Mitigating measures include: • Symptom-directed treatment aimed at reducing menstrual bleeding and pelvic symptoms. • Regular monitoring and follow-up, with annual review considered sufficient for asymptomatic or minimally symptomatic patients opting for conservative management.

[1525] Cramer SF, Patel A. The frequency of uterine leiomyomas. Am J Clin Pathol. 1990;94(4):435.
[1526] Marshall LM, Spiegelman D, Barbieri RL, et al. Variation in the incidence of uterine leiomyoma among premenopausal women by age and race. Obstet Gynecol. 1997;90:967-973.
[1527] Peddada SD, Laughlin SK, Miner K, Guyon JP, Haneke K, Vahdat HL, Semelka RC, Kowalik A, Armao D, Davis B, Baird DD. Growth of uterine leiomyomata among premenopausal black and white women. Proc Natl Acad Sci U S A. 2008;105(50):19887.
[1528] DeWaay DJ, Syrop CH, Nygaard IE, Davis WA, Van Voorhis BJ. Natural history of uterine polyps and leiomyomata. Obstet Gynecol. 2002;100(1):3.

	• Surgical options such as myomectomy or uterine artery embolisation for symptomatic relief, with hysterectomy remaining the definitive treatment for refractory cases. • Individualised risk assessment considering symptom severity, treatment requirements, and impact on fitness to work at sea.
Mitigated risk	With appropriate management and monitoring, the mitigated risk is generally: • **Acceptable** for individuals with controlled symptoms and stable disease. • **Acceptable with restrictions** for those requiring ongoing treatment or surgical intervention. • **Unacceptable** if symptoms are uncontrolled or complications arise despite treatment, indicating temporary or permanent unfitness for service.
Recommendation	• Women diagnosed with uterine fibroids should undergo comprehensive evaluation and individualised management planning. • Specialist input is recommended to optimise symptom control and assess fitness for duty. • Follow-up should be tailored to symptom severity and treatment modality.

22.14.4.5 N81 - PELVIC ORGAN PROLAPSE (POP)

Reviewed 2026-01-21

Significance	Pelvic organ prolapse (POP) is the herniation of pelvic organs to or beyond the vaginal wall. It is a common condition, although prevalence estimates vary due to differences in diagnostic criteria and the heterogeneity of symptoms. A large managed healthcare population study in the United States estimated that approximately 11.1% of American women will undergo surgery for POP or urinary incontinence before the age of 80 years, with nearly 30% requiring more than one surgical procedure [1529]. In the United Kingdom, the Oxford Family Planning Association Study, involving 17,032 women aged 25 to 39 years, reported an incidence of hospital admissions for prolapse of 2.04 per 1,000 person-years [1530]. Risk factors for POP include: • Parity: Risk increases with the number of childbirths. • Advancing age: Older women are at increased risk, with one study demonstrating a 40% increased risk for every additional 10 years of age [1531]. • Obesity: Women with a body mass index (BMI) greater than 25 have approximately double the risk of POP.

[1529] Brubaker L Bump R, Jacquetin B, et al. Pelvic organ prolapse. In: Abrams P, Cardozo L, Khoury S, et al, eds. Incontinence: 2nd international consultation on incontinence. Plymouth, UK: Health Publication Ltd; 2002:243-265.
[1530] Mant J, Painter R, Vessey M. Epidemiology of genital prolapse: observations from the Oxford Family Planning Association Study. Br J Obstet Gynaecol. 1997;104:579-585.
[1531] Swift S, Woodman P, O'Boyle A, Kahn M, Valley M, Bland D, Wang W, Schaffer J. Pelvic Organ Support Study (POSST): the distribution, clinical definition, and epidemiologic condition of pelvic organ support defects. Am J Obstet Gynecol. 2005;192(3):795.

	• Race and ethnicity: African American women have a lower prevalence of POP compared to other racial or ethnic groups in the US[1532] .
Possible medical incident(s)	• Sensation of vaginal bulge or pressure related to prolapsed structures. • Urinary dysfunction including incontinence or retention. • Defecatory dysfunction such as constipation or incomplete evacuation. • Sexual dysfunction. • Asymptomatic cases despite anatomical prolapse [1533].
Likelihood	The severity of symptoms does not correlate well with the degree of prolapse; many women remain asymptomatic. POP has traditionally been considered a progressive condition, with mild prolapse advancing over time. However, recent data suggest that progression occurs until menopause, after which prolapse may alternate between progression and regression [1534] [1535]. A prospective cohort study of 249 women over three years demonstrated that prolapse increased by at least 2 cm in 11% of participants and regressed by the same amount in 3% [1536]. The risk of POP after surgery is not uncommon and nearly 30% of women undergoing one procedure have at least one more[1537].
Consequences	POP may cause physical discomfort, functional impairment, and psychological distress. Symptoms such as urinary or defecatory dysfunction and sexual problems may affect quality of life and the ability to perform routine and emergency duties on board.
Unmitigated risk	Without appropriate management, the unmitigated risk is considered: **Individual:** Potentially unacceptable due to symptom burden and functional impairment. **Crew:** Potentially unacceptable if incapacitation or distraction occurs during critical operations. **Ship:** Potentially unacceptable due to risk of impaired performance and need for medical intervention.
Mitigation	Mitigating measures include: • Conservative management with pelvic floor physiotherapy and/or pessary use for symptomatic relief [1538].. • Surgical intervention for severe or refractory cases, with post-operative follow-up at 3 and 12 months.

[1532] Whitcomb EL, Rortveit G, Brown JS, Creasman JM, Thom DH, Van Den Eeden SK, Subak LL. Racial differences in pelvic organ prolapse. Obstet Gynecol. 2009;114(6):1271.
[1533] Jelovsek JE, Maher C, Barber MD. Pelvic organ prolapse. Lancet. 2007;369(9566):1027.
[1534] Bradley CS, Zimmerman MB, Qi Y, Nygaard IE. Natural history of pelvic organ prolapse in postmenopausal women. Obstet Gynecol. 2007 Apr;109(4):848-54. doi: 10.1097/01.AOG.0000255977.91296.5d. PMID: 17400845.
[1535] Ellerkmann RM, Cundiff GW, Melick CF, Nihira MA, Leffler K, Bent AE. Correlation of symptoms with location and severity of pelvic organ prolapse. Am J Obstet Gynecol. 2001 Dec;185(6):1332-7; discussion 1337-8. doi: 10.1067/mob.2001.119078. PMID: 11744905.
[1536] Bradley CS, Zimmerman MB, Qi Y, Nygaard IE. Natural history of pelvic organ prolapse in postmenopausal women. Obstet Gynecol. 2007;109(4):848.
[1537] Olsen AL, Smith VJ, Bergstrom JO, et al. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. Obstet Gynecol. 1997;89:501-506.
[1538] Hagen S, Stark D. Conservative prevention and management of pelvic organ prolapse in women. Cochrane Database Syst Rev. 2011;(12):CD003882.

	• Regular monitoring, with follow-up every 3–6 months for symptomatic patients and annual review for asymptomatic individuals under observation. • Individualized risk assessment including symptom evaluation, treatment requirements, likelihood of progression or complications, and impact on work capacity. • Specialist input is essential in assessing fitness to work at sea.
Mitigated risk	With appropriate management and monitoring, the mitigated risk is generally: • **Acceptable** for individuals with controlled symptoms and effective treatment. • **Acceptable with restrictions** for those requiring ongoing management or with recurrent prolapse. • **Unacceptable** if symptoms are uncontrolled or complications arise despite treatment, indicating temporary or permanent unfitness for service.
Recommendation	• Women with POP should undergo comprehensive evaluation and individualized management planning. • Specialist input is recommended to guide treatment and fitness assessment. • Follow-up schedules should be tailored to symptom severity and treatment modality.

The severity of symptoms does not correlate well with the degree of prolapse and many women are asymptomatic. Prolapse has traditionally been regarded as a progressive disease, with mild prolapse inexorably leading to more advanced disease. However, data suggest that the course is progressive until menopause, after which the degree of prolapse may follow a course of alternating progression and regression. Prolapse regression was demonstrated in a prospective cohort study of 249 women who were followed over a three-year period Prolapse increased by at least 2 cm in 11% of women and regressed by the same amount in 3% of women.
Treatment is often surgical although some women may be managed conservatively with physiotherapy and/or the use of a pessary These women are likely to require follow up every 3 – 6 months although woman who are being observed as asymptomatic may only require annual follow up. Post surgery follow up is usually undertaken at 3 and 12 months. The risk of POP after surgery is not uncommon and nearly 30% of women undergoing one procedure have at least one more[1539]. Specialist input is required in the fitness assessment of any female person with POP and a risk assessment including symptoms and impact on activity, treatment and follow up and the likelihood of progression or complications must be undertaken.

[1539] Olsen AL, Smith VJ, Bergstrom JO, et al. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. Obstet Gynecol. 1997;89:501-506.

22.14.5 PROTEINURIA, HAEMATURIA, GLYCOSURIA

R31, 80, 81, 82	Proteinuria, haematuria, glycosuria or other urinary abnormality Indicator of kidney or other diseases	T – If initial findings clinically significant P – Serious and non-remediable underlying cause, e.g. impairment of kidney function	L – When repeat surveillance required R, L – When uncertainty about cause but no immediate problem	Very low likelihood of serious underlying condition

22.14.5.1 R80 - PROTEINURIA

Reviewed 2026-01-21

Significance	In healthy adults, average daily urinary protein excretion is approximately 80 mg/day, with normal excretion defined as less than 150 mg/day. Albumin constitutes about 15% of this daily urinary protein excretion [1540]. Proteinuria, the presence of excess protein in the urine, varies in amount and may be transient or persistent. It is an important clinical finding as it serves as an independent risk factor for cardiovascular disease, mortality, and progression to end-stage renal disease in both the general population and patients with chronic kidney disease [1541] [1542] [1543]. Proteinuria is frequently detected incidentally during routine urine dipstick testing. Its prevalence increases with advancing kidney disease and is more common among individuals of Black ethnicity and those with elevated body mass index (BMI) [1544].
Possible medical incident(s)	• Transient proteinuria associated with benign or reversible causes such as fever, recent strenuous exercise, urinary tract infection (dysuria, urgency, frequency, foul-smelling or cloudy urine), or trauma. • Persistent proteinuria indicating underlying renal pathology requiring further investigation. • Progression of kidney disease leading to chronic kidney impairment or end-stage renal failure. • Increased cardiovascular risk associated with proteinuria.
Likelihood	Transient proteinuria is relatively common, reported in approximately 8–12% of young men [1545]. Persistent proteinuria is less common but warrants thorough evaluation due to its association with significant renal and systemic disease.

[1540] Viswanathan G, Upadhyay A. Assessment of proteinuria. Adv Chronic Kidney Dis. 2011;18:243-248.
[1541] van der Velde M, Matsushita K, Coresh J, et al. Lower estimated glomerular filtration rate and higher albuminuria are associated with all-cause and cardiovascular mortality. A collaborative meta-analysis of high-risk population cohorts. Kidney Int. 2011;79:1341-1352.
[1542] Gansevoort RT, Matsushita K, van der Velde M, et al. Lower estimated GFR and higher albuminuria are associated with adverse kidney outcomes. A collaborative meta-analysis of general and high-risk population cohorts. Kidney Int. 2011;80:93-104.
[1543] British Medical Journal. Low eGFR and high albuminuria predict end stage kidney disease and death at all ages. BMJ. 2012;345:e7478.
[1544] Kawar B, Bello AK, El Nahas AM. High prevalence of microalbuminuria in the overweight and obese population: data from a UK population screening programme. Nephron Clin Pract. 2009;112:c205-c212.
[1545] Park YH, Choi JY, Chung HS, Koo JW, Kim SY, Namgoong MK, Park YS, Yoo KH, Lee KY, Lee DY, Lee SJ, Lee JE, Chung WY, Hah TS, Cheong HI, Choi Y, Lee KS. Hematuria and proteinuria in a mass school urine screening test. Pediatr Nephrol. 2005 Aug;20(8):1126-30. Epub 2005 Jun 10.

	The sensitivity of urine dipstick testing for albuminuria ranges from 83% to 98%, with specificity between 59% and 86% [1546]. Qualitative estimates of proteinuria can be made using dipstick results, but confirmation with quantitative methods is required for persistent cases [1547].
Consequences	Persistent proteinuria may signify progressive renal disease, increasing the risk of cardiovascular morbidity and mortality. Without appropriate management, this may lead to end-stage renal disease requiring dialysis or transplantation. Transient proteinuria generally carries no long-term risk but may cause temporary concern or require exclusion of underlying causes.
Unmitigated risk	Without appropriate assessment and management, the unmitigated risk is considered: **Individual:** Potentially unacceptable if persistent proteinuria indicates progressive renal disease or systemic complications. **Crew:** Potentially unacceptable if renal impairment leads to incapacitation or medical emergencies at sea. **Ship:** Potentially unacceptable due to risk of impaired performance and need for medical evacuation.
Mitigation	Mitigating measures include: • Repeat urine dipstick testing after 1–2 weeks to distinguish transient from persistent proteinuria. • Quantitative measurement of proteinuria (e.g., 24-hour urine collection or spot urine protein-to-creatinine ratio) if dipstick positive on two consecutive samples. • Referral to nephrology for persistent proteinuria for comprehensive clinical assessment and renal function evaluation. • Individualized risk assessment considering underlying cause, treatment requirements, disease progression risk, and access to medical care. • Appropriate management of underlying conditions contributing to proteinuria.
Mitigated risk	Following appropriate investigation and management, the mitigated risk is generally: • **Acceptable** for individuals with transient proteinuria or well-controlled underlying disease. • **Acceptable with restrictions** for those requiring ongoing monitoring or treatment for chronic kidney disease. • **Unacceptable** if progressive renal impairment or complications persist despite treatment, indicating temporary or permanent unfitness for service.
Recommendation	• All individuals with dipstick-positive proteinuria on two occasions should undergo further quantitative assessment and specialist evaluation. • Management plans should be individualized based on the underlying diagnosis and clinical course.

[1546] White SL, Yu R, Craig JC, et al. Diagnostic accuracy of urine dipsticks for detection of albuminuria in the general community. Am J Kidney Dis. 2011;58:19-28.
[1547] National Kidney Foundation. KDOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Am J Kidney Dis. 2002;39(suppl 1):S1-S266.

	• Specialist input is essential in determining fitness for duty and appropriate restrictions. • Regular follow-up and monitoring are recommended to assess disease progression and treatment efficacy.

22.14.5.2 R31 – HAEMATURIA

Reviewed 2026-01-21

Significance	Haematuria, the presence of blood in the urine, is a relatively common finding and may be either grossly visible (red or brown urine) or microscopic, detected incidentally on urine dipstick testing. In many cases, particularly among young adults, haematuria is transient and benign [1548].. However, in adults over the age of 35 years, haematuria—whether transient or persistent—carries a significant risk of underlying malignancy and warrants thorough investigation [1549]. Urine dipsticks are highly sensitive for detecting haem, with false negatives being uncommon. False positives may occur due to: • Semen contamination following ejaculation. • Alkaline urine (pH > 9) or contamination with oxidising agents used in perineal cleaning. • Presence of myoglobinuria. • Therefore, any positive dipstick result must be confirmed by microscopic examination of the urine.
Possible medical incident(s)	Common causes of haematuria include: • Menstruation in women. • Urinary tract infection. • Pyelonephritis. • Nephrolithiasis (kidney stones). • Acute prostatitis. • Benign prostatic hyperplasia. • Trauma. Less common but clinically significant causes include: • Renal cell carcinoma. • Transitional cell carcinoma. • Cystic kidney disease. • Renal infarction. • Renal vein thrombosis. • Other rare renal or urological conditions.
Likelihood	The likelihood of haematuria varies with age, sex, and underlying pathology. Transient haematuria is common in younger populations and often benign, whereas persistent haematuria in adults over 35 years is more likely to indicate serious pathology, including malignancy.

[1548] Froom P, Ribak J, Benbassat J. Significance of microhaematuria in young adults. Br Med J (Clin Res Ed). 1984;288(6410):20.
[1549] Khadra MH, Pickard RS, Charlton M, Powell PH, Neal DE. A prospective analysis of 1,930 patients with hematuria to evaluate current diagnostic practice. J Urol. 2000;163(2):524.

Consequences	Haematuria may be a marker of significant underlying disease, including malignancy, infection, or renal pathology. Failure to identify and manage the cause may lead to progression of disease, complications, and impaired fitness for duty.
Unmitigated risk	Without appropriate assessment and management, the unmitigated risk is considered: **Individual:** Potentially unacceptable due to risk of undiagnosed malignancy or progressive renal disease. **Crew:** Potentially unacceptable if incapacitation occurs during critical operations. **Ship:** Potentially unacceptable due to risk of impaired performance and need for medical evacuation.
Mitigation	Mitigating measures include: • Confirmation of haematuria by microscopic urine examination following a positive dipstick test. • Comprehensive clinical history and physical examination to identify potential causes. • Appropriate investigations including urine cytology, blood pressure monitoring, renal imaging, and specialist referral as indicated. • Differentiation between transient and persistent haematuria by repeat testing and clinical follow-up. • Individualized risk assessment considering age, sex, symptomatology, and risk factors for malignancy.
Mitigated risk	Following appropriate investigation and management, the mitigated risk is generally: • **Acceptable** for individuals with identified benign causes or resolved transient haematuria. • **Acceptable with restrictions** for those requiring ongoing monitoring or treatment for underlying pathology. • **Unacceptable** if serious pathology such as malignancy is diagnosed or if haematuria persists without diagnosis, indicating temporary or permanent unfitness for service.
Recommendation	• All individuals with haematuria should undergo thorough evaluation to determine the underlying cause. • Follow-up plans should be tailored to the nature of haematuria (transient vs persistent) and individual risk factors. • Specialist input is essential in cases of persistent haematuria or suspected malignancy. • Fitness for duty assessments should incorporate findings from clinical evaluation and investigations.

22.14.5.3 R81 – GLYCOSURIA

Reviewed 2026-01-21

Significance	Glycosuria, the presence of glucose in the urine, may arise from two primary mechanisms: • Renal glycosuria, due to the inability of the renal proximal tubules to reabsorb filtered glucose despite normal plasma glucose concentrations. • Overflow glycosuria, resulting from abnormally elevated plasma glucose levels exceeding the renal threshold, commonly seen in diabetes mellitus. It is important to note that ascorbic acid (vitamin C) can cause false-negative results on urine glucose testing, potentially masking glycosuria [1550].
Possible medical incident(s)	• Undiagnosed or poorly controlled diabetes mellitus presenting with glycosuria. • Renal tubular dysfunction manifesting as isolated or combined proximal tubular defects (Fanconi syndrome). • Medication-induced proximal tubular injury leading to glycosuria and associated electrolyte disturbances.
Likelihood	Glycosuria is commonly detected during routine urine screening. The prevalence depends on the underlying cause, with renal glycosuria being rare and diabetes mellitus being a common cause worldwide.
Consequences	Glycosuria secondary to diabetes mellitus may indicate poor glycaemic control, increasing the risk of acute and chronic diabetic complications. Renal glycosuria and Fanconi syndrome may lead to electrolyte imbalances, renal impairment, and systemic complications if untreated – all of which may compromise the individual's ability to perform duties safely and effectively, and in some cases also lead to MEDEVAC for further treatment in hospital.
Unmitigated risk	Without appropriate evaluation and management, the unmitigated risk is considered: **Individual:** Potentially unacceptable if glycosuria reflects uncontrolled diabetes or progressive renal tubular disease. **Crew:** Potentially unacceptable if complications impair functional capacity or cause acute medical events. **Ship:** Potentially unacceptable due to risk of incapacitation and need for medical evacuation.
Mitigation	Mitigating measures include: • Comprehensive evaluation of glycosuria with confirmatory tests for diabetes mellitus, including fasting plasma glucose, oral glucose tolerance test, and glycated haemoglobin (HbA1c). • Further assessment of renal function and tubular integrity if plasma glucose is normal, to identify renal glycosuria or Fanconi syndrome.

[1550] Brigden ML, Edgell D, McPherson M, Leadbeater A, Hoag G. High incidence of significant urinary ascorbic acid concentrations in a west coast population--implications for routine urinalysis. Clin Chem. 1992;38(3):426.

	• Detailed clinical history and examination to identify potential causes such as medication use or systemic disease. • Specialist input to guide diagnosis, management, and fitness for duty assessment.
Mitigated risk	Following appropriate investigation and management, the mitigated risk is generally: • **Acceptable** for individuals with isolated renal glycosuria or well-controlled diabetes without complications. • **Acceptable with restrictions** for those requiring ongoing monitoring or treatment for diabetes or renal tubular disorders. • **Unacceptable if glycosuria** is associated with uncontrolled diabetes, progressive renal disease, or systemic complications despite treatment. If diabetes is diagnosed, see E08-E13 Diabetes mellitus.
Recommendation	• All individuals with glycosuria should undergo thorough evaluation to determine the underlying cause. • Management and fitness assessments should be individualized based on clinical findings and specialist advice.

22.14.6 REMOVAL OF ONE KIDNEY OR ONE NON-FUNCTIONING KIDNEY

Z90.5	Removal of kidney or one non-functioning kidney Limits to fluid regulation under extreme conditions if remaining kidney not fully functional.	P – Any reduction of function in remaining kidney in new person. Significant dysfunction in remaining kidney of serving person	R – No tropical or other heat exposure. Serving person with minor dysfunction in remaining kidney.	Remaining kidney must be fully functional and not liable to progressive disease. Based on renal investigations and specialist report.

Reviewed 2026-01-21

Significance	Individuals with a single functioning kidney generally experience few problems; however, long-term follow-up over 25 years indicates potential for gradual decline in renal function. This may manifest as increased proteinuria, reduced glomerular filtration rate (GFR), and an elevated risk of hypertension.
Possible medical incident(s)	• Progressive decline in renal function. • Development of proteinuria. • Hypertension secondary to reduced renal reserve. • Increased susceptibility to renal injury, particularly in high-risk environments or activities.
Likelihood	Most individuals with a solitary functioning kidney maintain adequate renal function for many years. However, a subset may develop progressive dysfunction over decades, influenced by factors such as age, comorbidities, and lifestyle.
Consequences	Declining renal function may lead to chronic kidney disease, cardiovascular complications, and reduced physiological reserve to manage fluid and electrolyte balance, especially under extreme conditions such as heat exposure or dehydration.

Unmitigated risk	Without appropriate monitoring and lifestyle modifications, the unmitigated risk is considered: **Individual:** Potentially unacceptable if progressive renal dysfunction or hypertension develops. **Crew:** Potentially unacceptable if renal impairment leads to incapacitation or medical emergencies at sea. **Ship:** Potentially unacceptable due to risk of impaired performance and need for medical evacuation.
Mitigation	Mitigating measures include: • Ensuring the remaining kidney is fully functional and free from progressive disease, confirmed by renal investigations and specialist assessment. • Avoidance of high-risk activities that may cause renal trauma, such as contact sports. • Maintenance of adequate hydration and adherence to a sensible diet to support renal health. • Regular follow-up, at least annually, with frequency adjusted based on renal function and clinical status – consider time limitation. • Individualized risk assessment incorporating specialist input to determine fitness to work at sea. • Restrictions on exposure to tropical or extreme heat environments for individuals with minor dysfunction in the remaining kidney – consider restrictions on sailing area.
Mitigated risk	With appropriate management and monitoring, the mitigated risk is generally: • **Acceptable** for individuals with a fully functional remaining kidney and no evidence of progressive disease. • **Acceptable with restrictions** for those with minor dysfunction requiring avoidance of heat exposure and close monitoring. • **Unacceptable** if significant dysfunction of the remaining kidney is present, indicating temporary or permanent unfitness for service.
Recommendation	• All individuals with a single functioning kidney should undergo comprehensive renal evaluation and specialist assessment. • Fitness to work at sea should be determined on an individual basis, considering renal function, risk factors, and occupational demands. • Time-limited certification may be appropriate, with regular reassessment to monitor renal status. • Restrictions on duties and environmental exposure should be applied as necessary to safeguard health and safety.

22.15 PREGNANCY, CHILDBIRTH AND THE PUERPERIUM

Reviewed 2026-01-26

O00-99	Pregnancy Complications, late limitations on mobility. Potential for harm to mother and child in the event of premature delivery at sea.	T – Late stage of pregnancy and early postnatal period. Abnormality of pregnancy requiring high level of surveillance.	R, L – Case-by-case assessment if minor impairing effects. May consider working until later in pregnancy in near-coastal waters.	Uncomplicated pregnancy with no impairing effects. Normally until 24th week. Pregnancy should be declared at an early stage so that necessary assessments can be made.

Significance	Pregnancy is a condition of critical importance to the ability to safely and effectively perform job tasks on board ship. It may impose significant risks to the health and safety of the pregnant individual, the unborn child, other crew members, and the safe operation of the vessel, particularly in the event of premature labour or delivery at sea.
Possible medical incident(s)	Potential medical incidents include complications related to late-stage pregnancy such as • premature labor, • impaired mobility due to physiological changes, and • obstetric emergencies. These incidents may compromise the individual's ability to perform routine or emergency duties and may pose risks to maternal and foetal well-being.
Likelihood	The likelihood of complications increases as pregnancy progresses, particularly beyond the 24th week [1551] [1552]. While uncomplicated pregnancies generally carry a low risk of incident in early stages, the probability of medical emergencies rises in late pregnancy. Precise incidence rates vary, but the risk of premature delivery or other complications at sea is considered moderate to high in the late stages [1553] .
Consequences	Should a medical incident occur, consequences may include inability of the pregnant person to perform safety-critical tasks, increased risk of harm to both mother and child, and potential jeopardy to the safety of other crew and ship operations. Premature delivery at sea, where neonatal intensive care is unavailable, significantly increases morbidity and mortality risk for the newborn.
Unmitigated risk	Without mitigation, the risk is **unacceptable beyond the early stages of pregnancy** due to the potential for serious maternal and foetal harm and compromised ship safety. Unmitigated risk is particularly high in late pregnancy and the early postnatal period when physiological demands and mobility limitations are greatest.
Mitigation	Mitigating measures include

[1551] Dahl E. Pregnancy at sea – 24th week of gestation is the limit. Internat. Marit. Health, 2007, 58, 1 – 4
[1552] UK Maritime and Coastguard Agency MGN 522. New and Expectant Mothers
[1553] UK Maritime and Coastguard Agency MGN 522. New and Expectant Mothers

	• early declaration of pregnancy to enable timely antenatal assessment and workplace adjustments. • Pregnant seafarers should receive antenatal care equivalent to that available ashore. • Work restrictions may include limiting duties, restricting sailing to near-coastal waters, and avoiding long voyages, especially beyond 24 weeks gestation. • Individualized risk assessments involving a specialist and company medical officer are essential to determine fitness for service and appropriate limitations.
Mitigated risk	With appropriate antenatal care, workplace adjustments, and sailing restrictions, the mitigated risk may be considered acceptable up to approximately 24 weeks of gestation. Beyond this point, even with mitigation, the risk remains elevated, and continued service at sea is generally not advisable.
Recommendation	Pregnancy should be declared as early as possible to facilitate necessary medical assessments and workplace modifications. • Pregnant seafarers without complications may continue to work until 24-week gestation, preferably in roles and sailing areas that accommodate their condition. • After 24 weeks, restrictions on near-coastal waters and short voyages should be applied, with consideration of individual circumstances. • Continuous monitoring and reassessment are required throughout pregnancy, with specialist input as needed. • Any cases with complications or uncertainty should be referred to the appellate body for further evaluation.

22.16 GENERAL - CONDITIONS NOT MENTIONED ELSEWHERE

Reviewed 2026-01-26

22.16.1 SPEECH DISORDERS

R47, F80	Speech disorders Limitations to communication ability	P – If incompatible with reliable performance of routine and emergency duties.	R – If assistance with communication/aids is needed to ensure reliable performance of routine and emergency duties. Specify assistance/aid.	Disorder does not impair reliable performance of routine and emergency duties.

A communication disorder refers to 'an impairment in the ability to receive, send, process and comprehend concepts or verbal, non-verbal and graphic symbol systems. Two major types of communication disorder are

- speech disorders – impairment in articulation, fluency (stuttering) and/or voice
- language disorders – impaired comprehension and/or use of spoken, written and/or other symbol systems.

22.16.1.1 R47, F80 - DYSARTHRIA - SPEECH DISORDER

Significance	Speech disorders represent impairments in the ability to articulate, fluently produce, or modulate voice, which may limit effective communication.

	Effective communication is essential for the reliable performance of routine and emergency duties on board ship. Impairments that compromise communication may pose risks to the health and safety of the individual, other crew members, passengers, and the safe operation of the vessel.
Possible medical incident(s)	Medical incidents related to speech disorders may include failure to communicate critical information during emergencies, misunderstandings in routine operations, or inability to respond appropriately to verbal commands. These incidents can arise from various underlying causes such as neurological impairment, structural defects, or developmental disorders.
Likelihood	The prevalence of speech disorders varies by type. Developmental stuttering, the most common fluency disorder, typically begins in childhood and is more frequent in males with a notable familial tendency. The likelihood of speech disorders interfering with job performance depends on severity and the presence of compensatory aids or assistance. Speech disorders may be classified into the following categories: **Articulation Disorders:** Difficulties in producing speech sounds, which may be secondary to hearing impairment, neurological conditions (e.g., dysarthria following cerebrovascular accident or brain tumour), apraxia, or structural defects such as cleft lip and palate or partial/complete glossectomy. **Fluency Disorders**: Developmental stuttering is the most common fluency disorder, typically beginning in childhood. It is more prevalent in males and has a strong familial component. **Voice Disorders:** These involve misuse or organic changes affecting the vocal mechanism. Causes include vocal ulcers, nodules, cancer, granuloma, infections, and resonance disorders such as hypernasality or hyponasality due to structural abnormalities of the palate or nasopharynx.
Consequences	Impaired communication may lead to delays or errors in executing safety-critical tasks, increasing the risk of accidents or injury. Inability to convey or comprehend instructions during emergencies can jeopardise the safety of the individual and others on board.
Unmitigated risk	Without appropriate support or accommodations, speech disorders that significantly impair communication pose an unacceptable risk to safe ship operations and crew safety. The unmitigated risk is particularly high if the individual's condition prevents reliable performance of emergency duties.
Mitigation	Mitigating measures include the provision of communication aids or assistance tailored to the individual's needs, such as speech therapy, use of augmentative and alternative communication devices, or assignment to roles with reduced communication demands. The seafarer's medical examiner may impose restrictions or specify required aids to ensure safe and reliable duty performance.
Mitigated risk	With suitable mitigation, the risk associated with speech disorders can be reduced to an acceptable level, allowing the seafarer to perform routine and emergency duties reliably. The effectiveness of mitigation depends on the adequacy of communication support and the nature of the seafarer's role.

Recommendation	Assessment of speech disorders should include evaluation of the impact on communication in the maritime environment and identification of necessary aids or assistance. Where communication impairment is incompatible with safe duty performance, restrictions or alternative duties should be considered.

22.16.1.2 R47, F80 – APHASIA – LANGUAGE DISORDER

Reviewed 2021-01-26

Significance	Language disorders encompass impairments in the comprehension and/or use of spoken, written, or other symbol systems, which may significantly affect the ability to communicate effectively on board ship. Effective communication is essential for the safe and efficient performance of routine and emergency duties. Language impairments may therefore pose risks to the health and safety of the individual, other crew members, passengers, and the safe operation of the vessel.
Possible medical incident(s)	Medical incidents related to language disorders may include failure to understand or convey critical information, misinterpretation of instructions, or inability to respond appropriately during emergencies. Such incidents can compromise individual and collective safety on board.
Likelihood	Language disorders may be developmental or acquired. Developmental language impairments include a range of disorders often associated with cognitive impairment, while specific language impairment occurs in the absence of intellectual disability or other neurological deficits. Acquired language disorders may result from degenerative neurological diseases, infections, neglect or abuse, and head injury. The likelihood of these disorders impacting job performance varies widely depending on severity and underlying cause.
Consequences	Impaired language comprehension or expression may lead to miscommunication, delayed response to safety-critical situations, and increased risk of accidents or injury. The consequences are particularly significant if the individual holds safety-critical duties or is responsible for communication-sensitive tasks.
Unmitigated risk	Without appropriate assessment and support, language disorders that impair communication pose an unacceptable risk to safe ship operations and crew safety. The unmitigated risk is heightened when the disorder is severe or exacerbated by stress or associated medical conditions.
Mitigation	Mitigating measures include specialist evaluation, individualised risk assessment, use of communication aids, and adjustments to duties or working environment. Consideration should be given to factors that may exacerbate the disorder, such as stress, and to any underlying or associated diseases. Restrictions or accommodations should be tailored to ensure reliable performance of routine and emergency duties.

Mitigated risk	With appropriate mitigation, including specialist input and necessary aids, the risk associated with language disorders can be reduced to an acceptable level, enabling safe and effective job performance.
Recommendation	Assessment of language disorders should prioritise the individual's ability to perform routine and emergency duties safely. Specialist consultation and individual risk assessment are essential. Decisions regarding fitness for service should consider the need for communication aids, potential exacerbating factors, and any underlying medical conditions. Cases requiring complex accommodations or presenting significant risk should be referred to the appellate body for further evaluation.

22.16.2 ALLERGIES

T78, Z88	Allergies (other than allergic dermatitis and asthma) Likelihood of recurrence and increasing severity of response. Reduced ability to reliably perform routine and emergency duties.	T – Until fully investigated by specialist P – If life-threatening response reasonably foreseeable.	Case-by-case assessment of likelihood and severity of response, management of the condition and access to medical care. R – Where response is impairing rather than life-threatening, and reasonable adjustments can be made to reduce likelihood of recurrence.	Where response is impairing rather than life-threatening, and effects can be fully controlled by long-term non-steroidal self-medication or by lifestyle modifications that are practicable at sea with no safety-critical adverse effects.

An allergic reaction to a substance can cause a wide range of symptoms from a localised swelling and discomfort to anaphylaxis – an acute, severe, life-threatening allergic reaction in pre sensitised individuals with involvement of at least two organs. Allergic dermatitis and asthma are other manifestations of an allergic reaction, and these have been discussed elsewhere. Whilst a local allergic reaction may be uncomfortable and prevent the person carrying out their duties for a short time it is usually self-limiting and resolves quickly. It may however be a sign of a more severe reaction to come so should be documented and followed up as appropriate.

22.16.2.1 T78, T80, T88 - ANAPHYLAXIS

Reviewed 2026-01-26

Significance	Allergic reactions can range from mild localised symptoms to severe, life-threatening events such as anaphylaxis. The presence of allergies may reduce a seafarer's ability to reliably perform routine and emergency duties, potentially compromising personal safety, the safety of other crew members, passengers, and the safe operation of the ship.
Possible medical incident(s)	Allergic reactions may manifest as localised swelling, discomfort, or systemic involvement including anaphylaxis, which is an acute, severe, and potentially fatal hypersensitivity reaction involving at least two organ systems. Allergic dermatitis and asthma, while related, are addressed separately. Local allergic reactions, although usually self-limiting, may indicate risk of more severe future reactions.

Likelihood	The likelihood of recurrence and severity of allergic reactions varies widely depending on the allergen and individual sensitivity. Case-by-case assessment is essential, considering the nature of the allergy, exposure risk, and effectiveness of management strategies. Reasonable adjustments and long-term control measures may reduce the likelihood of recurrence and severity.
Consequences	Severe allergic reactions, particularly anaphylaxis, can rapidly progress to life-threatening conditions requiring immediate medical intervention. Even less severe reactions may impair the ability to perform safety-critical tasks temporarily, increasing risk to the individual and others on board.
Unmitigated risk	Without thorough investigation and management, the unmitigated risk of allergic reactions, especially life-threatening ones, is unacceptable. Uncontrolled allergies may lead to unpredictable and severe medical emergencies at sea, where access to advanced medical care is limited.
Mitigation	Mitigation requires • specialist investigation and diagnosis, • avoidance of known allergens, • education on early symptom recognition, and • carrying of emergency medications such as adrenaline auto-injectors, antihistamines, and corticosteroids. • Reasonable workplace adjustments and lifestyle modifications practicable at sea should be implemented to minimize exposure and risk.
Mitigated risk	With appropriate management, education, and access to emergency treatment, the mitigated risk can be reduced to an acceptable level, allowing safe performance of duties. The effectiveness of mitigation depends on the individual's adherence to management plans and the nature of their duties.
Recommendation	Allergic conditions should be fully investigated by a specialist before fitness for service is determined. Life-threatening allergies warrant particular caution, with fitness decisions based on individualised risk assessments considering exposure likelihood, severity of potential reactions, and access to medical care. Seafarers must be trained in recognising early signs of anaphylaxis and equipped with necessary emergency medications.

Transplants

Z 94	Transplants – kidney, heart, lung, liver. (for prosthetics, i.e. joints, limbs, lenses, hearing aids, heart valves, etc. see condition-specific sections) Possibility of rejection. Side effects of medication.	T – Until effects of surgery and anti-rejection medication stable P – Case-by-case assessment, with specialist advice.	R, L – Case-by-case assessment, with specialist advice.	Not applicable.

22.16.2.2 Z94 - TRANSPLANTS

Reviewed 20256-01-26

Significance	Transplantation is the treatment of choice for end-stage organ failure affecting vital organs such as the heart, liver, lungs, and kidneys. While transplantation

	can significantly improve quality of life and survival rates, it imposes ongoing health considerations that are critical to the seafarer's ability to safely perform duties on board. These include the risk of graft rejection, side effects of immunosuppressive therapy, and the presence of co-morbidities related to the underlying disease or transplantation.
Possible medical incident(s)	Potential medical incidents include • acute or chronic graft rejection, • infections due to immunosuppression, • malignancies, • cardiovascular complications, • renal dysfunction, • new-onset diabetes mellitus post-transplant, and • other complications affecting graft function or general health status. These incidents may impair the individual's capacity to perform routine and emergency duties reliably.
Likelihood	The likelihood of medical complications varies depending on the type of transplant, time since transplantation, immunosuppressive regimen, and individual patient factors. Early post-transplant periods carry higher risks, which tend to stabilise over time with effective management. Co-morbidities and complications may arise unpredictably, necessitating ongoing surveillance.
Consequences	Medical incidents related to transplantation can lead to sudden deterioration in health, incapacitation, or emergency situations requiring urgent medical intervention. Such events may jeopardise the safety of the individual, other crew members, and the safe operation of the ship.
Unmitigated risk	Without stabilisation of post-surgical effects and immunosuppressive therapy, the unmitigated risk is **unacceptable** due to the potential for severe complications and impaired functional capacity. Unmanaged co-morbidities further increased risk.
Mitigation	Mitigating measures include stabilisation of the transplant recipient's condition prior to certification, regular specialist follow-up, comprehensive medical review including blood tests, urinalysis, echocardiography, and prompt management of complications. Fitness for service should be determined on a case-by-case basis with specialist input. Time-limited and restricted certificates are recommended to ensure ongoing monitoring.
Mitigated risk	With appropriate medical management, specialist oversight, and adherence to treatment protocols, the mitigated risk may be acceptable, allowing the seafarer to perform duties safely under specified limitations, restrictions and monitoring.
Recommendation	Seafarers with organ transplants require thorough specialist evaluation and individualised risk assessment before certification. Fitness decisions should consider • stability of graft function, • control of co-morbidities, and • ability to access medical care.

	Certificates should be time-limited and may include restrictions on duties or sailing areas. Continuous medical surveillance and rapid access to specialist care are essential.

22.16.3 PROGRESSIVE CONDITIONS

Classify by condition	Progressive conditions, which are currently within criteria, e.g. Huntington's chorea (including family history) and keratoconus.	T – Until investigated and satisfactorily treated if indicated P – Consider at pre-sea medical if other choice of profession is more appropriate.	Case-by-case specialist assessment. Such conditions are acceptable if, within validity period of medical certificate, progression to a degree that impairs ability to perform routine and emergency duties is judged unlikely.	Case-by-case assessment, with specialist advice. Such conditions are acceptable if, within validity period of medical certificate, progression to a degree that impairs ability to perform routine and emergency duties is judged unlikely.

22.16.3.1 G10 - HUNTINGTON'S CHOREA

Reviewed 2026-01-26

Significance	Huntington's Disease (HD) is a progressive neurodegenerative disorder characterised by motor dysfunction (notably chorea), psychiatric illness, and cognitive decline. The condition poses significant risks to the ability to safely perform routine and emergency duties on board due to its progressive nature affecting movement, cognition, and behaviour.
Possible medical incident(s)	Medical incidents may include • sudden deterioration in motor control leading to • impaired mobility, • loss of coordination, • dysphagia, • respiratory compromise, • psychiatric crises including depression and psychosis, and • cognitive impairment affecting judgement and decision-making.
Likelihood	Worldwide prevalence is approximately 2.7 per 100,000 population. In Europe, North America, and Australia, prevalence is higher at 5.7 per 100,000. In Asia, prevalence is lower at 0.4 per 100,000. Worldwide incidence is estimated at 0.38 per 100,000. HD affects men and women equally. Typical onset is between 35 and 45 years, with a range from 2 to 80 years [1554]. Juvenile onset (Westphal variant) occurs before age 20 and accounts for less than 10% of cases [1555] [1556].

[1554] Hayden MR. Huntington's chorea. New York, NY: Springer; 1981.
[1555] Pringsheim T, Wiltshire K, Day L, Dykeman J, Steeves T, Jette N. The incidence and prevalence of Huntington's disease: a systematic review and meta-analysis. Mov Disord. 2012 Aug;27(9):1083-91. Epub 2012 Jun 12.
[1556] Seneca S, Fagnart D, Keymolen K, Lissens W, Hasaerts D, Debulpaep S, Desprechins B, Liebaers I, De Meirleir L. Early onset Huntington disease: a neuronal degeneration syndrome. Eur J Pediatr. 2004;163(12):717.

	Symptoms often begin insidiously with subtle movement abnormalities, psychiatric symptoms, or cognitive changes. Patients may be unaware or deny symptoms [1557]., making family or colleague reports important for early detection. Progressive motor dysfunction, including chorea, leads to impaired voluntary movement, hypotonia, dystonia, and abnormal eye movements. In advanced stages, involvement of respiratory muscles and swallowing difficulties increase risk of aspiration and respiratory failure. Psychiatric manifestations such as depression, irritability, anxiety, obsessive-compulsive disorder, and psychosis may occur at any stage, potentially impairing safety-critical decision-making and behaviour. **Psychiatric symptoms** Common symptoms associated with HD include depressed mood, irritability, apathy, and anxiety, with prevalences ranging from 33 - 76%[1558]. Other, less frequently observed symptoms are obsessive – compulsive disorder (10 – 52%) and psychosis (3 – 11%). Depression, paranoia, delusions, and hallucinations can develop at any point in the illness[1559] but Psychiatric symptoms do not correlate. **Dementia** Cognitive decline is inevitable although the onset and rate of decline are variable. The main effects are a reduced ability to make decisions, multi-task and switch from one set of cognitive goals to another, so called executive dysfunction [1560]. Whilst some symptoms may be controlled with medication, HD is a chronic, progressive disease whatever the age of onset[1561]. The slow but relentless deterioration in cognitive and motor function causes significant morbidity and early mortality with a life expectancy from diagnosis of 10 – 30 years [1562].
Consequences	For the individual, Huntington's Disease leads to progressive deterioration in motor control, including chorea, dystonia, hypotonia, and impaired voluntary movements, which can result in falls, injuries, and inability to perform physically demanding or safety-critical tasks. Dysphagia and respiratory muscle involvement increase the risk of aspiration pneumonia and respiratory failure. Psychiatric symptoms such as depression, irritability, anxiety, obsessive-compulsive behaviours, and psychosis may impair judgement, concentration, and emotional stability, further compromising the individual's capacity to respond appropriately in emergencies.

[1557] McCusker EA, Gunn DG, Epping EA, Loy CT, Radford K, Griffith J, Mills JA, Long JD, Paulsen JS, PREDICT-HD Investigators of the Huntington Study Group. Unawareness of motor phenoconversion in Huntington disease. Neurology. 2013 Sep;81(13):1141-7. Epub 2013 Aug 21.
[1558] van Duijn E, Kingma EM, van der Mast RC. Psychopathology in verified Huntington's disease gene carriers. J Neuropsychiatry Clin Neurosci. 2007;19(4):441-8.
[1559] Shiwach R. Psychopathology in Huntington's disease patients. Acta Psychiatr Scand. 1994;90(4):241.
[1560] Peavy GM, Jacobson MW, Goldstein JL, Hamilton JM, Kane A, Gamst AC, Lessig SL, Lee JC, Corey-Bloom J. Cognitive and functional decline in Huntington's disease: dementia criteria revisited. Mov Disord. 2010 Jul 15;25(9):1163-9. doi: 10.1002/mds.22953. PMID: 20629124; PMCID: PMC2910142.
[1561] Dorsey ER, Beck CA, Darwin K, Nichols P, Brocht AF, Biglan KM, Shoulson I, Huntington Study Group COHORT Investigators. Natural history of Huntington disease. JAMA Neurol. 2013 Dec;70(12):1520-30.
[1562] Paulsen J, Miller A C, Hayes T, Shaw A. Cognitive and behavioral changes in Huntington disease before diagnosis. Handbook of Clinical Neurology 2017;144:69-91. DOI:10.1016/B978-0-12-801893-4.00006-7

	For the crew, the presence of a seafarer with HD may increase the risk of accidents or operational errors due to impaired communication, delayed responses, or inability to perform assigned duties. This can place additional burden on colleagues and potentially compromise team coordination and morale. For ship operations, progressive impairment in a seafarer's physical and cognitive abilities may jeopardise the safe navigation, maintenance, and emergency management of the vessel. Failure to perform critical duties reliably can increase the risk of incidents, endangering the safety of all personnel on board and the vessel itself.
Unmitigated risk	Without monitoring and management, the unmitigated risk is unacceptable due to the progressive nature of HD and its impact on physical and cognitive function, which can compromise safe performance of duties and emergency response.
Mitigation	Mitigation requires specialist neurological and psychiatric assessment, regular monitoring for disease progression, and individualised risk assessment. Fitness for service should be reviewed frequently, with consideration of limitations or restrictions on duties and sailing areas as appropriate.
Mitigated risk	With specialist input and close monitoring, the mitigated risk may be acceptable if progression within the certificate validity period is unlikely to impair job performance. However, given the progressive nature of HD, ongoing reassessment is essential.
Recommendation	Seafarers with Huntington's Disease or a family history suggestive of HD should undergo specialist evaluation and individualised risk assessment. Early symptoms, including subtle motor or psychiatric signs, must be carefully considered. Fitness for service decisions should be cautious, with time-limited certification and restrictions as needed. Patients suffering with HD should be reviewed every 6 – 12 months or sooner if the condition changes. This need for regular follow up will usually dictate that a time limited certificate is given if the person is considered fit enough to work at sea.

22.16.3.2 H18.6 - KERATOCONUS

Reviewed 2026-01-26

Significance	Keratoconus is a progressive, non-inflammatory disorder of the cornea characterised by thinning and conical protrusion, resulting in a gradual loss of visual acuity. The condition typically presents during puberty or early adulthood and may significantly impact the ability to perform safety-critical tasks on board, particularly those requiring precise vision.
Possible medical incident(s)	Medical incidents may include progressive visual impairment leading to reduced ability to safely navigate, operate machinery, or respond to emergencies. Sudden deterioration in vision or complications such as corneal scarring may further impair functional capacity.

Likelihood	The prevalence of keratoconus is estimated to range from 50 to 230 per 100,000 individuals, with no significant difference between males and females [1563] [1564] [1565]. **Progression** One study reported a 12% rate of corneal transplantation (keratoplasty) over eight years of follow-up [1566]. Factors associated with increased risk of progression include [1567]. • younger age at diagnosis, • presence of corneal scarring, and • poorer baseline visual acuity.
Consequences	Progressive visual loss may compromise the individual's ability to perform routine and emergency duties reliably, increasing the risk of accidents and operational errors. Impaired vision can affect navigation, machinery operation, and communication, thereby impacting crew safety and ship operations.
Unmitigated risk	Without appropriate assessment and management, the unmitigated risk may be unacceptable if visual acuity falls below required standards, potentially endangering the individual and others on board.
Mitigation	Mitigating measures include obtaining a specialist ophthalmological report detailing current visual acuity and the likely rate of deterioration over the validity period of the medical certificate. Use of corrective lenses, contact lenses, or other visual aids should be optimised. Regular ophthalmic follow-up is essential to monitor progression and adjust management accordingly.
Mitigated risk	With appropriate specialist input, visual correction, and monitoring, the mitigated risk may be acceptable, provided visual acuity meets the standards for fitness and deterioration is unlikely to impair safe performance within the certificate period.
Recommendation	Seafarers with keratoconus should undergo specialist ophthalmological evaluation prior to certification. Fitness decisions should be based on current visual acuity, prognosis for progression, and ability to meet vision standards required for their duties. Regular follow-up and timely reassessment are recommended. Cases with rapid progression or significant visual impairment should be referred to the appellate body.

[1563] Krachmer JH, Feder RS, Belin MW. Keratoconus and related noninflammatory corneal thinning disorders. Surv Ophthalmol. 1984;28(4):293.

[1564] Kennedy RH, Bourne WM, Dyer JA. A 48-year clinical and epidemiologic study of keratoconus. Am J Ophthalmol. 1986 Mar;101(3):267-73.

[1565] Rabinowitz YS. Keratoconus. Surv Ophthalmol. 1998 Jan;42(4):297-319.

[1566] Vazirani J, Basu S. Keratoconus: current perspectives. Clin Ophthalmol. 2013;7:2019-30. doi: 10.2147/OPTH.S50119. Epub 2013 Oct 14. PMID: 24143069; PMCID: PMC3798205.

[1567] Gordon MO, Steger-May K, Szczotka-Flynn L, Riley C, Joslin CE, Weissman BA, Fink BA, Edrington TB, Olafsson HE, Zadnik K, Clek Study Group. Baseline factors predictive of incident penetrating keratoplasty in keratoconus. Am J Ophthalmol. 2006 Dec;142(6):923-30. Epub 2006 Sep 1.

22.16.4 CONDITIONS NOT SPECIFICALLY LISTED				
Classify by condition	Conditions not specifically listed	T – Until investigated and satisfactorily treated if indicated P – If permanently impaired ability to reliably perform routine and emergency duties	Use analogy with related conditions as a guide. Consider likelihood of sudden incapacity, of recurrence or progression and limitations on performing normal and emergency duties. If in doubt, obtain advice and consider restriction	Use analogy with related conditions as a guide. Consider likelihood of sudden incapacity, of recurrence or progression and limitations on performing normal and emergency duties. If in doubt, obtain advice or consider restriction

22.16.4.1 PRINCIPLE FOR ASSESSING CONDITIONS NOT SPECIFICALLY COVERED

Reviewed 2026-01-26

It is beyond the scope of this guidance to cover every medical disorder that might affect a seafarer's ability to perform duties safely and effectively, or that could jeopardise the health and safety of themselves, others on board, or the safe operation of the ship.

Such conditions should be assessed directly against section 1 of the Health Regulations, which states:

"These Regulations shall ensure that any person working on board a Norwegian ship or mobile offshore unit is medically fit for service on board, is not suffering from one or more medical conditions likely to be aggravated by service at sea or to endanger the health and safety of other persons on board."

In applying this, an individual risk assessment should be carefully conducted, using analogy with related conditions mentioned in the regulations and guidance, to reach a conclusion consistent with the safety standards required by the Health Regulations.