

Health KPIs for medical emergencies onboard

SEAFARERS HOSPITAL SOCIETY 18 21

INTERNATIONAL MARITIME HEALTH FOUNDATION

IMHA

Report focus:

In a time of crisis, KPIs need to do more than measure routine activity or compliance. They should help organisations understand whether systems, people and resources are sufficiently prepared, whether responses are timely and coordinated, and whether learning takes place after an incident. For maritime health and wellbeing, this means shifting the emphasis from static indicators to crisis-sensitive measures that capture preparedness, escalation, communication, resilience, recovery and continuous improvement. The purpose is to provide practical evidence that drives better decision-making, safer onboard care and a stronger culture of support before, during and after a crisis.



1.
How SHS Best Practice KPIs Apply to Medical Emergencies Onboard

The Seafarers Hospital Society Best Practice KPI Toolkit is designed as a progressive, data driven self assessment framework that complements regulatory requirements (MLC, STCW, SOLAS) and focuses on **trackability and continuous improvement** rather than punitive measurement.

Key principles relevant to emergency situations include:

- **Frequency and outcomes of medical emergencies** (injuries, illnesses, medevacs, deaths)
- **Effectiveness of onboard medical preparedness** (training, equipment, procedures)
- **Use and outcomes of telemedical services** (TMAS)
- **Response capability rather than only health promotion**

SHS explicitly identifies **medical emergencies at sea** as a core area under International Requirements for Seafarers' Health, making emergency focused KPIs both legitimate and encouraged within the framework.

The IMO Definition of an Emergency / Crisis

While "crisis" is a broad term, the IMO structures its operational framework around the concept of a "**maritime emergency**." In maritime law, this is any situation (apart from standard Search and Rescue) that poses a threat of loss to a vessel or causes a navigational or environmental hazard. [1][2][3]

Core Components of IMO Crisis Management:

Distress Phase: The IMO defines the most critical emergency phase as "a situation wherein there is reasonable certainty that a person, a vessel or other craft is threatened by grave and imminent danger and requires immediate assistance".[1]

2.
Recommended Health KPIs for Medical Emergencies Onboard

The KPIs below are derived from SHS best practice guidance and established emergency medicine performance indicators, adapted for shipboard realities in times of crisis.

Level 1: SHS Base Level

"We have the required systems, people, and equipment in place."
Focus: capability and minimum compliance.

Emergency KPI	Why it fits Base Level
Compliance rate of medical chest & emergency equipment inspections	Confirms availability of required medical resources
Existence of written medical emergency procedures	Evidence of MLC-required arrangements for emergencies
Access to TMAS (contract or recognised provider)	Mandatory emergency medical support mechanism

Purpose: **At Base level, the KPI confirms presence, not performance.**

Level 2: SHS Performance Accountability Level

"We measure emergency events and know how often they occur."
Focus: counting, recording, and basic review.

Emergency KPI	Why it fits Base Level
Emergency Response & Timeliness	
Time from Incident to First Medical Assessment (minutes)	Measures speed of onboard response after an emergency occurs
Appropriate Time to Contact TMAS following a Medical Incident at sea	Tracks prompt escalation to shore based medical expertise
Percentage of Emergencies assessed and Managed Within Agreed Response Time Standard	Assesses consistency of emergency preparedness across vessels
Emergency Incidence & Severity	
Number of medical incidents requiring emergency care per 100 Seafarers per Year	Baseline indicator for emergency health burden onboard
Number of minor illnesses or Injuries resulting in Loss of >3 Working Days	Directly referenced by SHS as a core health KPI
Number of acute illness episodes NOT requiring emergency care	Separates minor illness from emergency health events

Purpose: **Organisations can demonstrate awareness of what is happening, even if response quality is not yet optimised.**

Level 3: SHS Enhanced Level

"We measure quality, timeliness, and outcomes - and act on them."

Focus: effectiveness, consistency, and improvement.

Emergency KPI	Why it fits Enhanced Level
Outcomes of Emergency Events	
Number of medical evacuations (Medevac) per 100 seafarers per year	Key SHS metric reflecting severity and emergency capability limits
Number of cases treated and managed onboard with TMAS intervention (per 100 seafarers per year)	Demonstrates effectiveness of onboard care and telemedicine support
Number of emergency related fatalities with cause of fatality (per 100 seafarers per year)	Essential for trend analysis and prevention planning
Crisis Intervention & Management	
Crisis Management Systems are in place	Formal framework for structuring policies, procedures, training and resources for crisis management
Crisis Management Intervention Training is provided for all Officers	Refresher Training is carried out every five years
Crisis Intervention and Management Drills are carried out annually*	- Drills are a core part of resilience training* - Number of drills (per 100 Seafarers)*
Resilience training is in place for all crew (including shoreside crew and staff)	- Ability to recognise signs of 'not-coping' in self and others - Scenario-based training (incl. Post-incident decompression)
Periodic reviews of Crisis Intervention and Management system are carried out to agreed timeframe	- Formal feedback/ reporting structure in place (as required below): • During • Immediately After • Ongoing - Anonymous Reporting System in place for all crew - All crew groups have presence on periodic reviews
Establishment of Industry Crisis Intervention & Management System Support Network	- Representation from all Regions (global) - Wide inclusion across maritime industries
Appropriate Communication Policies for Crisis Intervention and Management are in place	- This includes signposting for all crew to receive support as required (i.e. physical health, mental health, legal advice) - Signposting is reinforced in all training - Signposting available in company material public locations, in cadet training manuals

Purpose: **Enhanced level looks at how well systems work, not just whether they exist.**

Level 4: SHS Best Practice Level

"We learn from emergencies and systematically improve care."
Focus: learning culture, prevention, reflection and innovation.

Emergency KPI	Why it fits Best Practice
Capability, Preparedness and Training	
Percentage of crew with valid refresher medical training in the last 5 years	Core indicator for emergency readiness
Compliance Rate of Annual Medical Chest Equipment Inspections - Arrangement for restocking to make good use – applies to operational readiness for both emergency and non-emergency situations.	Assess operational readiness for medical intervention and care
Number of Emergency Medical Drills for management of medical cases on board (Conducted per Vessel per Year)	Supports the SHS emphasis on measurable activity where outcomes lag
All medication Supplies must have provision in place for medical prescriptions- arrangement for restocking to make good use (This applies to both emergency and non-emergency situations)	Assess operational readiness for medical intervention and care
Number of medical crew with valid resilience training for medical emergencies and 1st Aid per year (per 100 seafarers per year)	- Understand the signs of 'not coping' in self and others - Scenario-based training
Crisis Intervention & Management	
Mental Health 'Check-in' for all crew	- Formal Structure in place for carrying out checks - Informal 'check-ins' trained as part of resilience training - Provision for 'check-in' with families of seafarers
Post-incident Decompression Support as appropriate	- support for all crew as appropriate (see below): - Remote - In-person - Group - Individual
Post Emergency Management and Recovery	
Number of Medical Repatriations for Emergency Reasons (per 100 seafarers per year)	Explicit SHS recommended KPI under MLC health management

Continued over page

Emergency KPI	Why it fits Best Practice
Number of Emergency cases requiring access to definitive in-patient Shore Based Care (per 100 seafarers per year)	Measures end-to-end emergency pathway effectiveness
Number of Emergency cases requiring access to definitive out-patient Shore-Based care per year (per 100 seafarers per year)	Measures end to end emergency pathway effectiveness
Percentage of Emergency Cases with Completed Post Incident Review	Aligns with SHS "culture of care" and continuous improvement principles

Purpose: **Best Practice is not "zero emergencies" but continuous learning and improvement.**

1. www.ebsco.com/research-starters/social-sciences-and-humanities/crisis
2. www.international-maritime-rescue.org/news/sar-matters-defining-distress-continued
3. www.imo.org/en/mediacentre/pressbriefings/pages/fragmented-responses-are-no-longer-sufficient-imo-sg-strait-of-hormuz.aspx

Glossary of Maritime Medical and Emergency Response KPIs

Term	Definition	Source / status
Acute illness episode	New onset or sudden worsening of illness constituting one clinically distinct episode, from first symptoms or recognition to resolution or stabilization. Recurrent events count separately only after documented recovery.	Proposed KPI definition; WHO/BEC
Acute illness	Illness of sudden or relatively rapid onset, or an abrupt deterioration of an existing condition; acuity does not by itself determine severity.	WHO/BEC (adapted)
Agreed response standard	Predefined maximum elapsed time and required actions for assessment, escalation and management, approved by the operator and relevant clinical governance body; thresholds must be specified by urgency category.	Proposed operational definition; WHO/BEC
Appropriate Time to Contact TMAS following a Medical Incident at Sea	Time by which TMAS should be contacted after a medical incident: immediately for suspected life-threatening conditions or clinical deterioration, and promptly according to a documented triage protocol for other cases. No universal minute threshold is established here.	Proposed operational definition; ILO/MLC
Appropriate Time to Contact TMAS following a Medical Incident at Sea	Time by which TMAS should be contacted after a medical incident: immediately for suspected life-threatening conditions or clinical deterioration, and promptly according to a documented triage protocol for other cases. No universal minute threshold is established here.	Duplicate in source; ILO/MLC
Capability	Ability of an individual, team or organization to deliver a specified medical response under defined operating conditions, using personnel, equipment, procedures and communications.	ISO 22361 (adapted)
Crisis Management	Coordinated strategic and operational activities used to anticipate, respond to and recover from a serious disruptive event threatening people, vessel operations or organizational continuity.	ISO 22361 (adapted)
Crisis Management Intervention	Specific action to stabilize a crisis, reduce harm, coordinate decisions, mobilize resources or support affected persons during or after a crisis.	Proposed operational definition; ISO 22361
Crisis Management Intervention Training	Structured education and exercises that develop and test personnel competence to undertake crisis interventions, including communication, decision-making and coordination.	Proposed operational definition; ISO 22361
Distress Phase	Search-and-rescue emergency phase in which reliable information indicates a vessel or person is in grave and imminent danger and requires immediate assistance. Distinct from medical triage severity.	IMO SAR Convention, Annex §5.2
Does not require emergency care	A condition assessed as not requiring time-critical emergency intervention, while potentially requiring routine care, observation or TMAS advice; reassess if symptoms change.	Proposed triage definition; WHO/BEC
Emergency care vs. First Aid	First aid is immediate initial assistance to an ill or injured person; emergency care is time-sensitive clinical assessment and treatment of acute illness or injury. First aid may be part of emergency care but is not equivalent to it.	IFRC; WHO
Emergency Incidence & Severity	Incidence: number of new emergency medical incidents during a period relative to the seafarer population/exposure. Severity: predefined classification of clinical seriousness or consequences (e.g., life-threatening, evacuation, death); report separately.	Proposed KPI definition; WHO/BEC

Glossary of Maritime Medical and Emergency Response KPIs - continued

Term	Definition	Source / status
Major illness	Illness causing substantial functional impairment, high clinical risk, or need for advanced medical evaluation/treatment, as determined by a documented severity classification; not necessarily acute.	Proposed classification; WHO/ BEC
Maritime Phase	Defined operational stage of a maritime medical event (e.g., onboard recognition/management, TMAS consultation, evacuation or shore transfer). Categories and transition rules must be specified locally.	Proposed term; no verified universal standard definition
Medical emergency	Acute illness or injury presenting actual or suspected immediate threat to life, organ function or serious health deterioration and requiring urgent assessment and intervention.	WHO/BEC (adapted)
Medical Incident	Distinct occurrence involving illness, injury or other health concern aboard a vessel that prompts assessment, care, monitoring, reporting or TMAS contact.	Proposed reporting definition; IMGS/ MLC
Minor illness	Illness with limited clinical severity and functional impact, ordinarily manageable with basic onboard care and monitoring; may still be acute.	Proposed classification; IMGS
Non- acute minor illness	Non-acute illness of minor severity, without time-critical features, generally manageable with routine onboard care or planned consultation.	Proposed classification; WHO/ BEC
Non-acute illness	Illness that does not have a sudden onset or immediate time-critical presentation; it may be minor or major.	Proposed classification; WHO/ BEC
Non-acute major illness	Serious or substantially impairing illness without an immediate acute presentation, requiring planned clinical evaluation, treatment or referral.	Proposed classification; WHO/ BEC
Number of cases treated managed onboard with TMAS intervention (per 100 seafarers per year)	Number of distinct medical cases managed aboard with documented TMAS clinical input ÷ total seafarer-years of exposure × 100. Count each case once; define whether follow-up consultations are excluded.	Proposed KPI formula; ILO/MLC
Number of Emergency Medical Drills for management of medical cases on board	Count of completed, documented onboard emergency medical drills in the reporting period; specify vessel coverage, drill scenario, participants and whether repeated drills count.	Proposed KPI definition; ISO 22361/ MLC
Number of emergency related fatalities with cause of fatality (per 100 seafarers per year)	Number of deaths attributable to emergency medical incidents ÷ seafarer-years of exposure × 100, reported by medically documented underlying cause; separately disclose unknown causes.	Proposed KPI formula; WHO/MLC
Number of medical evacuations (Medevac) per 100 seafarers per year	Number of distinct medical cases requiring transfer from vessel to shore or another care platform for medical reasons ÷ seafarer-years × 100. Define planned disembarkation versus emergency evacuation.	Proposed KPI formula; MLC

Glossary of Maritime Medical and Emergency Response KPIs - continued

Term	Definition	Source / status
Number of medical incidents requiring emergency care per 100 seafarers per year	Number of distinct incidents meeting the agreed emergency-care case definition ÷ seafarer-years of exposure × 100. Multiple encounters for one incident count once.	Proposed KPI formula; WHO/BEC
Number of medical incidents requiring emergency care per 100 seafarers per year	Number of distinct incidents meeting the agreed emergency-care case definition ÷ seafarer-years of exposure × 100. Multiple encounters for one incident count once.	Duplicate in source; WHO/BEC
Percentage of Emergencies Assessed and Managed Within Agreed Response Time Standard	Emergency incidents for which documented initial assessment and required management actions were completed within the applicable agreed thresholds ÷ all eligible emergency incidents × 100. Report missing timestamps and exclusions.	Proposed KPI formula; WHO/BEC
Preparedness	State of readiness achieved through planning, staffing, training, equipment, supplies, communication systems and exercises to respond effectively to foreseeable medical emergencies.	Proposed operational definition; ISO 22361/ MLC
Requires emergency care	Condition with suspected time-sensitive risk of death, serious harm or deterioration requiring urgent medical assessment or intervention under the agreed triage protocol.	WHO/BEC (adapted)
Resilience	Ability of individuals, teams or organizations to adapt to, withstand and recover from disruptions while maintaining or restoring essential functions.	ISO 22361 (conceptual alignment)
Resilience Training	Education, simulations and exercises to strengthen coping, adaptation, continuity and recovery capacities following stressors or disruptive incidents.	Proposed operational definition; ISO 22361
Time from Incident to First Medical Assessment	Elapsed time from the documented incident onset/recognition timestamp to the first documented structured medical assessment by an appropriately trained responder or clinician; define time-zero and missing-time rules.	Proposed KPI definition; WHO/BEC

Reference key

WHO — https://www.who.int/health-topics/emergency-care

BEC — https://www.who.int/publications/i/item/basic-emergency-care-approach-to-the-acutely-ill-and-injured

MLC — https://normlex.ilo.org/dyn/nrmlx_en/f?p=NORMLEXPUB:91:0::::P91_SECTION:MLC_A4

ILO — https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:312309:NO

IMGS — https://imo-epublications.org/content/books/9789241547208

IFRC — https://www.ifrc.org/sites/default/files/2022-09/IFRC-First%20Aid-Policy-EN.pdf

ISO — https://www.iso.org/standard/50267.html

SAR — https://www.refworld.org/legal/agreements/imo/1979/45159



4th Floor, Silverstream House, 45 Fitzroy Street, Fitzrovia, London W1T 6EB

020 8858 3696 | admin@seahospital.org.uk | seahospital.org.uk

Charity registered number 231724