World Health Organization

CLASSIFICATION AND MINIMUM STANDARDS FOR **EMERGENCY MEDICAL TEAMS**

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Classification and minimum standards for emergency medical teams

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Contents

	FOREWORD	ix
	ACKNOWLEDGEMENTS	x
	ABBREVIATIONS	xi
	INTRODUCTION	xiii
1.	**THE EMT INITIATIVE**	1
1.1	Introduction	1
1.2	EMT Initiative Governance	5
1.3	EMT Network	6
1.4	The Global Classification	7
1.5	Support mechanisms to national government/ministry of health response in emergencies	9
2.	**GUIDING PRINCIPLES AND CORE STANDARDS**	10
2.1	Introduction	10
2.2	Guiding principles	10
3.	**TYPOLOGY**	14
3.1	Introduction	14
3.2	Terminology of EMTs	15
3.3	EMTs typology	17
3.3.1	Speed, timing and duration of deployment	19
4.	**COORDINATION AND CAPACITY STRENGTHENING**	21
4.1	Introduction	21
4.2	EMT capacity strengthening	22
4.2.1	National disaster management and emergency health preparedness and response	22
4.2.2	Adoption of EMT principles	23
4.2.3	Investing in national EMT capacity: systems, staff, supplies and equipment, structure and space	23
4.3	Role of WHO in supporting national health authorities (ministries of health)	26

4.3.1 Methods to amplify Member State requests for international assistance, respect for sovereignty 26
4.3.2 Reception and departure centre 26
4.4 Activation of EMTs 27
4.5 EMT coordination 29
4.5.1 Coordination of operations within incident management structure 29
4.5.2 Models of coordination 30
4.5.3 Additional channels for coordination 30
4.6 Monitoring and reporting during deployment 31

5. CLINICAL CARE TECHNICAL STANDARDS 33

5.1 Introduction 33
5.1.1 Triage 36
5.1.2 Assessment, resuscitation and stabilization 37
5.1.3 Referral and transfer 38
5.1.4 Ward management 39
5.1.5 Wounds 40
5.1.6 Burns 41
5.1.7 Fractures and limb injuries 43
5.1.8 Spinal cord injuries 44
5.1.9 Communicable diseases 45
5.1.10 Noncommunicable diseases 47
5.1.11 Reproductive, maternal and newborn health 48
5.1.12 Child health 51
5.1.13 Analgesia and anaesthesia 53
5.1.14 Intensive care 55
5.1.15 Surgery and perioperative 56
5.1.16 Malnutrition 59
5.1.17 Palliative care 61
5.1.18 Rehabilitation 62
5.1.19 Mental health and psychosocial well-being 64
5.1.20 Transfusion services 66
5.1.21 Laboratory services 68
5.1.22 Medical imaging and reporting 69
5.1.23 Clinical pharmacy 71
5.1.24 Sterilization 73
5.1.25 Infection prevention control 75
5.1.26 Health promotion and community engagement 76
5.1.27 Chemical, biological, radiological and nuclear (CBRN), toxicology and toxinology 77

6. OPERATIONAL SUPPORT TECHNICAL STANDARDS 78

6.1 Introduction 78
6.2 Operations support (logistics) technical standards 78
6.2.1 Power and fuel 79
6.2.2 Communications 81
6.2.3 Transportation and fleet 82
6.2.4 Food 84
6.2.5 Warehouse management 85
6.2.6 Pharmacy supply chain and medical stock management 87
6.2.7 Donation management 89
6.2.8 Safety and security 90
6.2.9 Facility structure, environment and ventilation 92
6.2.10 Mobilization 94
6.2.11 Site assessment and planning 96
6.2.12 Sequential build 97
6.2.13 Demobilization 98
6.3 Operations support (WASH) technical standards 100
6.3.1 Water supply 101
6.3.2 Hygiene 103
6.3.3 Environmental cleaning 105
6.3.4 Health-care waste management 107
6.3.5 Sanitation 109
6.3.6 Vector and pest control 111
6.3.7 Dead body management 113

ANNEX 1. EMT governance structure – roles and responsibilities 115
ANNEX 2. THE Global Classification 117
ANNEX 3. Guiding principles 120
ANNEX 4. Core standards checklist 122
ANNEX 5. Types of specialized care teams 132
ANNEX 6. Operational support assumptions and calculations 141

Foreword

In recent decades we have seen numerous major emergencies which have deeply impacted millions worldwide. The COVID-19 pandemic has taken a devastating toll in ways that no one can measure, although countries have responded and been affected differently. Surge capacity mechanisms for health-care delivery have been activated with health-care workers playing a key role in unprecedented conditions. It has underscored the importance of expanding training and standardized high-quality public health and medical assistance as a high priority at the national, regional and global level for emergency preparedness and response.

The revision of the Blue Book could not have come at a better time. It has been prepared with careful consideration of lessons learnt since the inception of the Emergency Medical Teams Initiative and gives greater emphasis and priority to building national capacities, as well as leveraging international capacity when needed. This publication provides useful guidance for Member States, ministries of health and nongovernmental organizations delivering emergency assistance. National emergency medical teams are the best option for providing immediate and appropriate surge response for emergencies directly affecting populations, while international teams may help relieve overwhelmed health systems. The efficiency and effectiveness of countries and local authorities in mobilizing existing resources is only as good as the quality of care they are able to provide.

This publication serves as a practical guide for teams and aims to complement emergency response systems, fostering seamless collaboration with all emergency response actors and networks. Over the next few years, I look forward to seeing an increase in national and international EMTs that meet these standards and continue to serve as essential components of a country's emergency preparedness and response to save lives, improve health and serve the most vulnerable in need.

Dr. Michael J. Ryan
Executive Director
WHO Health Emergencies Programme

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Abbreviations

BOR Bed occupancy rate
CO2 Carbon Dioxide
EMT Emergency Medical Team
EMTCC EMT Coordination Cell
EOC Emergency Operations Centre
HIV Human Immunodeficiency Virus
ICRC International Committee of the Red Cross
ICU Intensive Care Unit
IEC Information. Education and Communication
I-EMT International Emergency Medical Teams
IFRC International Federation of Red Cross and Red Crescent Societies
IHR (2005) International Health Regulations (2005)
IPC Infection prevention and control
JEE Joint External Evaluation
NCDs Noncommunicable diseases
N-EMT National Emergency Medical Teams
NGO Nongovernmental organization
OT Operating theatre
PFA Psychosocial first aid
PPD Persons per day
PPE Personal protective equipment
PWD Persons with disability
SAG Strategic Advisory Group
SAM Severe acute malnutrition
SGBV Sexual and gender-based violence
SOP Standard operating procedure
TBSA Total body surface area
WASH Water, sanitation and hygiene
WHO World Health Organization

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Introduction

Since the publication of the Classification and Minimum Standards for Foreign Medical Teams in Sudden Onset Disasters in 2013, significant progress has been made to develop a standardized approach to emergency medical teams (EMTs).

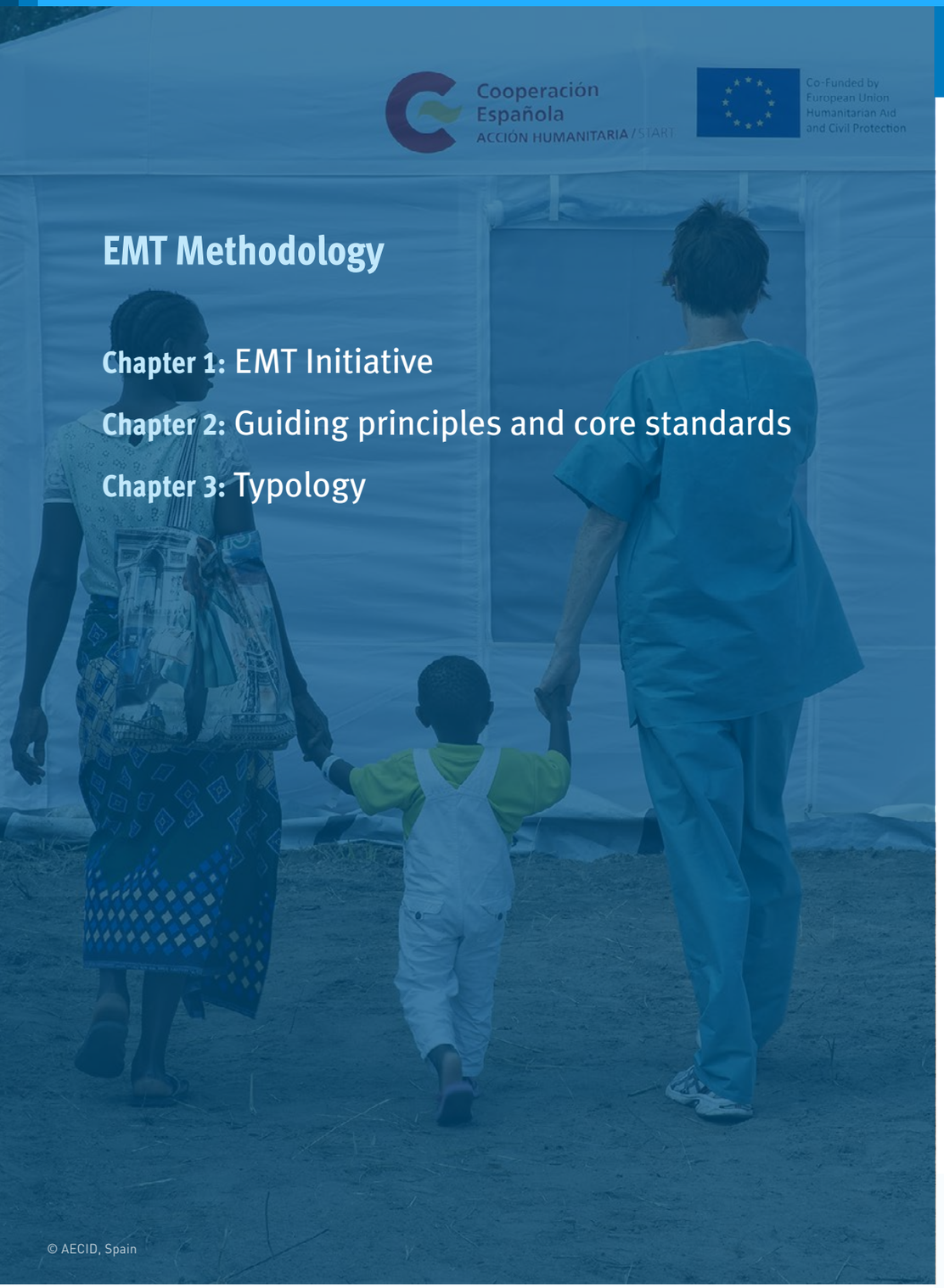
Prior to this, organizations were deploying medical teams using various names, terms and operational/technical capabilities. This meant that receiving countries were offered teams of varying capacities making accepting or declining offers and distributing teams challenging. Today, countries receiving EMTs can be confident that the global EMT community speak "the same language" in describing what they are offering.

This edition of Classification and minimum standards for emergency medical teams builds on these efforts by incorporating further areas of expansion of EMT typology, capacity and capability, with refinement of guiding principles and core standards, along with a more structured framework across technical standards for clinical care and support services expected by EMTs. Furthermore, it draws and builds upon knowledge, experience and lessons learnt from individuals and the EMT network.

This handbook aims to provide a clear outline of the guiding principles and standards required by EMTs in delivering quality care to patients. It is also intended as practical and informative guidance for Member States, ministries of health, national and international EMTs and other key stakeholders who want to build such capability and better understand requirements. It is complemented by information and technical guidance documents available in the EMT knowledge hub.[1]

Taking into consideration variations in pre-existing capacities and capabilities across different health systems, the technical standards (Chapters 5 and 6) include minimum requirements applicable to all EMTs and recommendations dependent on the context and decisions taken by each EMT, except for those marked ⓘ applicable for international deployments. The level of detail provided in each subchapter is a result of available evidence and best practices to ensure the quality of care provided by EMTs while addressing the need for clarification expressed by the wider EMT community.

[1] WHO Emergency Medical Teams Knowledge Hub: https://extranet.who.int/emt/guidelines-and-publications



EMT Methodology

Chapter 1: EMT Initiative

Chapter 2: Guiding principles and core standards

Chapter 3: Typology

1 The EMT Initiative

1.1 Introduction

In 2010, lessons from the health response in Haiti[2] and an experts meeting review on Foreign Field Hospitals in the Aftermath of Sudden-Impact Disasters[3] convened by the Pan American Health Organization that same year initiated the ground work for the development of principles, criteria and standards for foreign medical teams. This propelled the publication of the Classification and minimum standards for Foreign Medical Teams in sudden onset disasters which led to the establishment of the Emergency Medical Team (EMT) Initiative and the first use of this classification system in Typhoon Haiyan in the Philippines in 2013.

The Initiative was also established in alignment with the International Health Regulations (2005), known as IHR (2005), which requires Member States to develop certain minimum public health capacities to "detect, assess, notify and report events" and to "respond promptly and effectively to public health risks and public health emergencies of international concern". The Joint External Evaluation (JEE) tool, published in February 2016, is a voluntary process that supports Member States in assessing progress towards meeting the core capacities required by IHR (2005). Of many aspects assessed by the JEE, medical countermeasures and personnel deployment targets processes for sending and receiving medical countermeasures and public health and medical personnel from international partners during public health emergencies were included, as well as case management for IHR (2005) related hazards.

Recently, Resolution EB 146.R10[4] calls upon Member States, regional economic integration organizations, international, regional and national partners, donors and partners to strengthen the role of local health workforces. The resolution also calls for the development of effective and high-performing, national, subnational and regional EMTs, as appropriate, in line with WHO classification and minimum standards.

Access to quality health services without financial hardship must also be sustained in health emergencies.

[2] https://www.paho.org/disasters/index.php?option=com_content&view=article&id=1626:health-response-to-the-earthquake-in-haiti-january- 2010&Itemid=924&lang=en

[3] https://www.paho.org/disasters/index.php?option=com_content&view=article&id=674:pahowho-guidelines-for-the-use-of-foreign-field- hospitals&Itemid=924&lang=en

[4] EB 146.R10[1] https://apps.who.int/gb/ebwha/pdf_files/EB146/B146_R10-en.pdf

Health services provided upon emergency response should be safe, people-centred, timely, equitable, integrated and efficient. The EMT Initiative supports deploying teams and developing the structures and processes needed to provide quality health services in host countries. The adoption of the EMT methodology has the potential to positively impact the clinical quality of care provided, thus enhancing coordination and improving health outcomes for the population served.

Fig. 1. EMT Initiative mission, vision and values

THE EMT Initiative

VISION

Save lives, preserve health and alleviate suffering

MISSION

To enhance surge capacity of countries through promotion of rapid mobilization and efficient coordination of both national and international medical teams and the health-care workforce to reduce loss of life and prevent long-term disability caused by disasters, outbreaks and other emergencies.

VALUES

Inclusiveness, transparency, global cohesion and regional adaptation, needs driven and adherence to quality standards and methodology.

The key objectives and its main drivers are described in Fig. 2 below.

Fig. 2. EMT Initiative key objectives and drivers

THE EMT INITIATIVE KEY OBJECTIVES

SURGE CAPACITY/EMTs

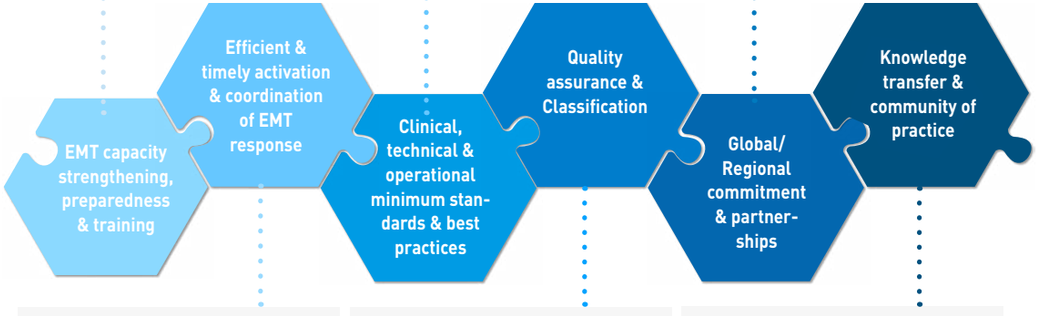
- Support Member States and NGOs in building capacity and capability in coordination and domestic response.
- Encourage governments with strong EMTs to provide help to other countries in case of need, or even to join a regional group of combined teams. This setup contributes strongly to an effective and efficient health emergency response.

TECHNICAL WORKING GROUPS, MINIMUM STANDARDS

- Coordinate the development of new guidance and update existing guidance, minimum standards and recommendations applicable to EMTs deploying nationally and internationally. Minimum standards cover all aspects of the teams, including technical/clinical, management and logistics. WHO counts on and works with the participation and contribution of the global EMT community ensuring that the standards are applicable to emergency settings in all countries.

GOVERNANCE, PARTICIPATION, NETWORK, ADVISORY

- Provision of peer to peer platforms for strategy setting and cooperation, through regionalized governance structures, fostering participation of all Member States, regional/international and nongovernmental organizations (NGO).
- Co-production of standards with experts from the EMT community



EMT CC

- Support countries to self-manage and coordinate, under the minstry of health, a surge in clinical care needs within its health EOC, and in cooperation with international teams. This allows for daily reporting to the ministries of health, which in turn strengthens the public health surveillance system, and places the national authorities in the primary leadership position.
- Training of expert coordinators to be deployable in times of emergencies to support minstries of health in the coordination of the surge of national and international EMTs.
- Support the coordination of medical teams in conflict settings where more nuanced coordination mechanisms may be required.

GLOBAL CLASSIFICATION, IN FIELD QA VISITS

- Coordination of the Global Classification that assess an EMT's compliance with agreed minimum standards. Teams that have passed the assessment are "Classified" and placed on WHO's directory of internationally deployable teams.
- Support countries in the development of mechanisms, such as accreditation or other external evaluation programmes.

GLOBAL/REGIONAL WEBINARS, EMT EXTRANET

- Provision of a platform for knoweldge sharing.
- Encourage the development of communities of practice on relevant topics.

EMTs are defined as groups of health professionals, including doctors, nurses, paramedics, support workers, logisticians, who treat patients affected by an emergency or disaster. They come from governments, charities/ nongovernmental organizations (NGOs), the military, civil protection, international humanitarian networks,including the International Red Cross and Red Crescent Movement, Médecins sans Frontières (MSF), United Nations contracted teams and the private-for-profit sector. They work according to minimum standards agreed upon by the EMT community and its partners, and deploy fully trained and self-sufficient so as not to burden an already stressed national system.

Fig. 3. Background on EMTs

Background on EMTs

EMTs have a long history of responding to sudden onset disasters (SOD) such as the Haiti earthquake, the Indian Ocean Tsunami and floods in Pakistan. Historically, EMTs have had a trauma and surgical focus, but the West African Ebola (2014–2016) outbreak has shown their value in outbreak response and other forms of emergencies. The Ebola response was the largest deployment of EMTs for an outbreak (58 teams), which pales in comparison to the 151 teams deployed to respond to Typhoon Haiyan in November 2013 and the nearly 300 teams deployed to Haiti following the earthquake in 2010.

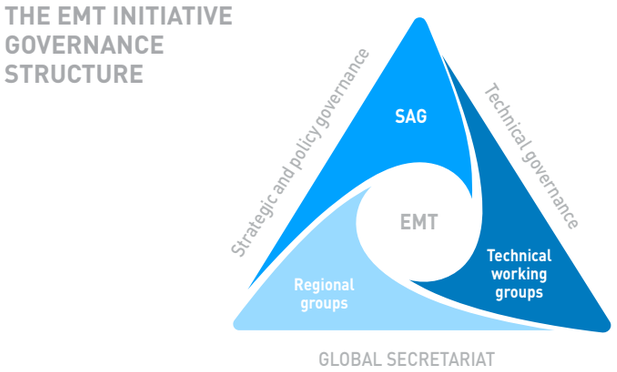
Requirements for emergency health response are broader than those required for sudden onset disasters and trauma. They must include the ability to care for a wide range of conditions, from communicable to noncommunicable diseases; as well as teams to support populations affected by flood, conflict and protracted crises such as famine. There is a need for clinical surge capacity in all emergencies with health consequences and EMTs have a role in re-establishing/maintaining essential health services.

The next sections present an overarching view of critical elements that support the EMT Initiative in fulfilling its mission: governance structure; the network; Global Classification; and support mechanisms to host governments and ministries of health.

1.2 EMT Initiative Governance

The purpose of the EMT Initiative Governance is to:
(a) establish a vision, mission, key objectives and goals;
(b) articulate and coordinate the engagement of stakeholders at different levels to ensure meaningful participation and contribution; and
(c) establish management practices to support the achievement of the objectives and evaluate performance towards them.[5]

Fig. 4. The EMT Initiative governance structure



The Strategic Advisory Group (SAG) has oversight over policy and strategic aspects at the global level, while the Regional Groups, representing all six regions, guide the implementation of the EMT Initiative objectives at regional level. Technical Working Groups (TWGs) are tasked with technical oversight to address clinical, operational and policy gaps mandated by the SAG. The EMT Initiative and its governance bodies are supported by WHO in its capacity of global EMT Secretariat, with support from the regional offices. The governance structure provides a platform to discuss and agree on common ways forward among its members at strategic technical and operational levels. Details about composition, roles and responsibilities of the SAG, Regional Groups, TWGs and the EMT Secretariat, can be found in Annex 1.

[5] Adapted from https://www.who.int/healthsystems/hss_glossary/en/

1.3 EMT Network

The EMT Network is a cooperative structure composed of governmental and nongovernmental EMTs that coalesce around a shared purpose (the EMT Initiative mission, vision and values) and abide by a common methodology (guiding principles, core/technical standards and coordination mechanisms) on the basis of trust and reciprocity.[6]

Five core features make the network effective: common purpose; cooperative structure; critical mass; collective intelligence; and community building.[4] The EMT Secretariat links the network together, safeguarding the standards and coordination methodology, supporting organizations in their implementation and promoting a platform for knowledge sharing and continuous improvement from experiences and contributions from all its members.

Knowledge sharing has, in essence, been driven by a need for a practical how-to resource that both national and international teams can reference against to better interpret, translate and apply core and technical standards. It consists of a multitude of resources, from published documents accessible on the EMT extranet[7] over peer-to-peer sharing of protocols, to regular regional or global online interactions on specific topics. Also, different WHO-collaborating centres support the development of resources and conduct research on related topics for use by the EMT Network.

The EMT Network is an asset countries can tap into when in need of surge in response to health emergencies. The Network promotes knowledge and best practice sharing among members; supports governments in strengthening their capacities to respond to emergencies; and provides a cadre of experts to support development of technical standards.

[6] Based on The Health Foundation, 2014 Effective Networks for Improvement. The Health Foundation: London; 2014. Available at https://www.health.org.uk/publications/effective-networks-for-improvement

[7] https://extranet.who.int/emt/

1.4 The Global Classification

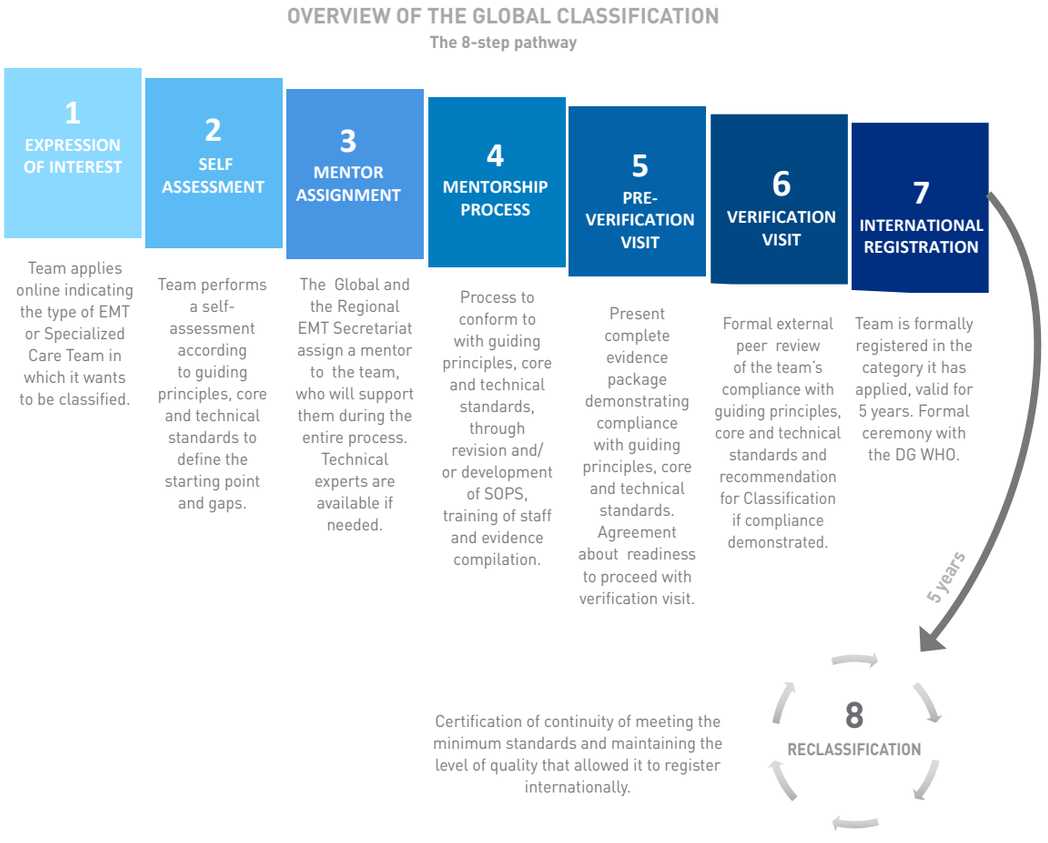
Learning from the experience of the International Search and Rescue Advisory Group (INSARAG), the global directory of classified EMTs provides countries with proposed capabilities of prospective teams, therefore facilitating acceptance of teams and tasking by decision-makers in the affected country. The EMT Global Classification is an external peer review evaluation mechanism that assesses EMT compliance against internationally agreed guiding principles and core and technical standards, described in detail in Chapters 2, 5 and 6.

The main goal is to improve quality of care and professionalism during EMT deployments, thereby benefiting the populations served by ensuring EMTs arrive in a timely manner, are well trained and integrated with the health system that normally treats their families. The target audience of the EMT Global Classification are teams who plan to deploy internationally.

Once passing the verification visit, these teams will join the WHO registry of internationally deployable teams.

EMTs are supported throughout this process with external peer support and review from mentors who play a crucial role in guiding teams towards meeting international minimum standards. The EMT Secretariat oversees the entire process, including coordination, management and resources. There are eight steps to Global Classification, briefly described in Fig. 5 below. More details can be found in Annex 2.

Fig. 5. The Global Classification 8-step pathway



Internationally deploying EMTs that have passed the Global Classification will be more likely to be requested to respond by affected Member States and have a streamlined arrival process.

The EMT Initiative will support countries in the design and implementation of a national accreditation system adapting technical standards to context as a way to assess compliance of national EMTs (N-EMTs) to the agreed minimum standards. The accreditation of N-EMTs is a sovereign decision of each member state.

1.5 Support mechanisms to national government and ministry of health response in emergencies

A strong focus of the EMT Initiative is strengthening national surge capacity at different levels of a health system. Primarily hinged on contributing to Sustainable Development Goal 3.d, aimed at strengthening the capacity of all countries and in particular developing countries, for early warning, risk reduction and management of national and global health risks. This area of the Initiative supports every country in leading emergency response and coordination through rapid deployment of national and international teams meeting minimum quality standards when needs are identified.

Table 1 below presents a list of the various support mechanisms the EMT Initiative can provide and its potential impacts on a country's surge capacity.

Table 1. EMT support mechanisms to host countries ministries of health and potential outcomes

EMT Initiative enables countries to:	Potential outcomes
Improve their national capacity to respond to their own emergencies and to assist other countries	• Better quality of care for a population affected by an emergency • N-EMTs are capacitated to respond nationally and subnationally, ensuring a timelier, cost effective and appropriate response to health emergencies.
Accept and use EMTs in a timely, coordinated manner	• National health systems are capacitated to lead the activation and coordination of the response of national and international EMTs based on a commonly agreed methodology. • Donors can expect the teams they support to have reached an international minimum standard and work within a globally coordinated response system.
Develop an evaluation mechanism for their N-EMTs	• Improve quality, professionalism and accountability of response. • Develop a national registry of N-EMTs ready to respond to health emergencies with known capacities and capabilities.

2 Guiding principles and core standards

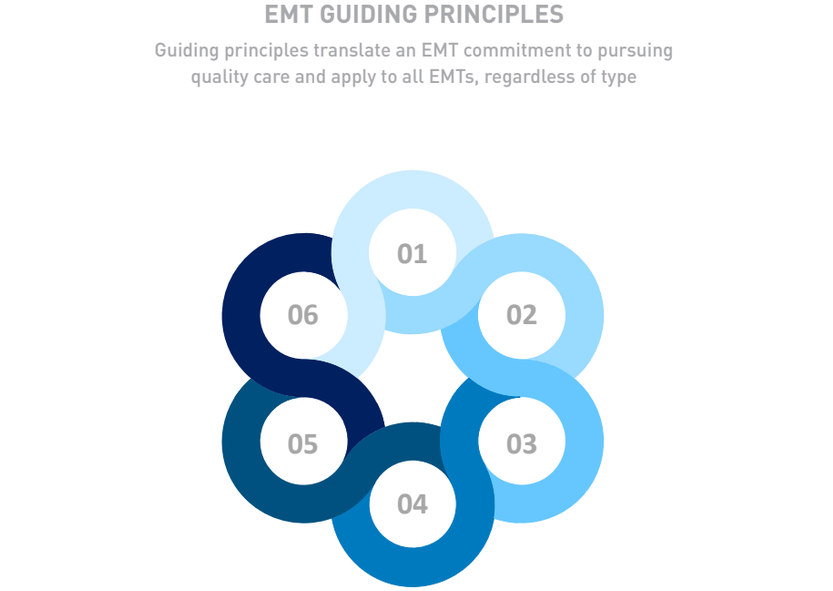
2.1 Introduction

Guiding principles and core standards are an agreed set of principles and standards that apply to all EMTs, including specialized care teams, regardless of their type or whether deploying nationally or internationally.

2.2 Guiding principles

The guiding principles direct the quality of care that governs the practice of EMTs and their members. The guiding principles acknowledge and are aligned with the humanitarian principles of humanity, neutrality, impartiality and operational independence. EMTs bear the responsibility to acknowledge and respect national sovereignty and not misuse or refuse to partake in required policy and coordination mechanisms of a country and designated health authority. The diagram in Fig. 6 below illustrates the six guiding principles. For more detail on the descriptor of each guiding principle refer to Annex 3.

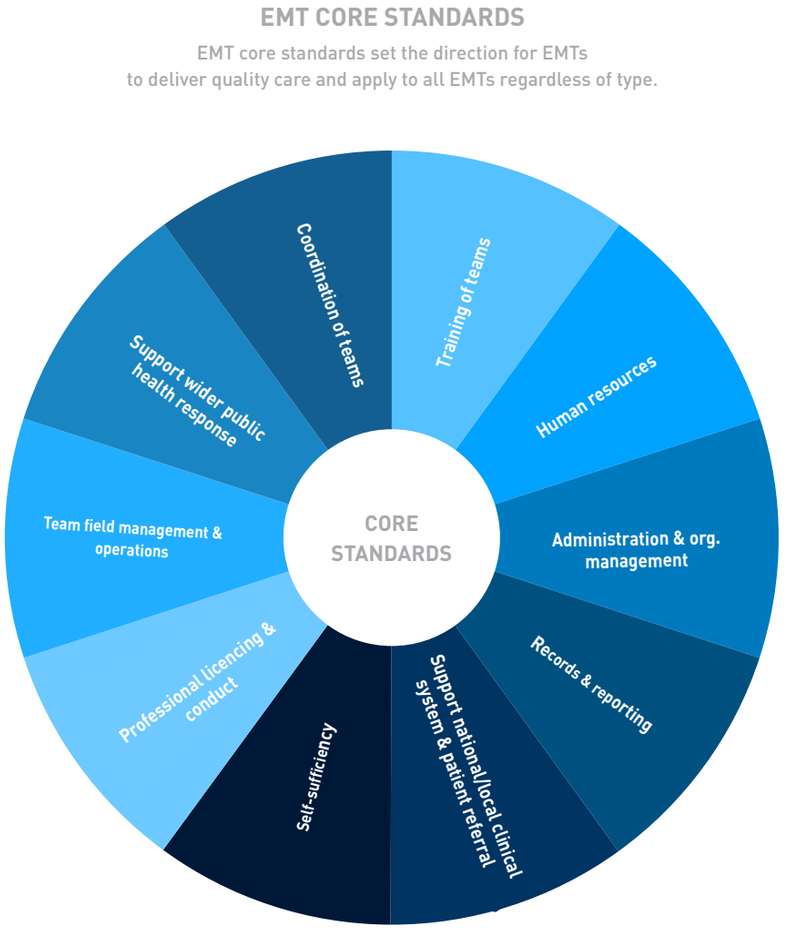
Fig. 6. EMT Guiding principles



Core standards

The EMT core standards present a set of overarching areas and key processes that are required to be in place for EMTs to ensure appropriate operational and professional capacity and capability to provide quality care for the population they serve, while protecting staff and not posing a burden on the host country.

Fig. 7. EMT Core standards



COORDINATION OF TEAMS

EMT organizations agree to be part of a coordinated response using agreed national (and if relevant, international) mechanisms to offer support to the affected area, deploy only if accepted, register on arrival and continue to coordinate in the field throughout their deployment.

HUMAN RESOURCES

Mechanism to ensure staff are recruited, screened and are readily deployable. Staff have access to preventative measures to decrease risk of ill health on deployment and arrangements are in place for care of team members during deployment and for evacuation and aftercare if required. Effective human resources management policies are in place to promote protection of the vulnerable.

RECORDS AND REPORTING

EMTs will keep confidential patients records, with a copy available to the patient. They will report regularly and prior to departure to the relevant local authorities using national reporting forms or, if not available, the agreed EMT minimum dataset. Teams undertake not to conduct research without appropriate consent of the patient and ethical board approval from national authorities.

SELF-SUFFICENCY

EMTs should be self-sufficient through either direct supply or local organization of support that does not undermine or detract from the ability of the local community to respond.

TEAM FIELD MANAGEMENT AND OPERATIONS

Day to day management of operations while deployed including managing their own safety and security, critical incident management and liaison with relevant local authorities and media.

TRAINING OF TEAMS

A training and learning programme is available either directly organized by the EMT or by outsourcing to training providers. The programme recognizes prior learning and builds knowledge sequentially. A learning and development pathway system is in place to identify and provide mentorship to those identified as potential technical and team leaders capable of escalating complexity and seniority of role.

ADMINISTRATION AND ORGANIZATION MANAGEMENT

Administrative and management systems that allow EMTs to rapidly and safely deploy teams and maintain headquarters office support from their home base throughout missions.

SUPPORT NATIONAL/LOCAL CLINICAL SYSTEM AND PATIENT REFERRAL

Support the affected health system, be part of the referral pathway and offer to accept patients from, and/or refer patients to other health facilities or EMTs.

PROFESSIONAL LICENCING AND CONDUCT

There are systems in place to ensure all staff are licenced for the practice they will undertake while deployed. EMTs have the ability to accept, investigate and correct the outcomes of complaints. All international teams must have medical indemnity cover for all clinical staff, national teams must have cover when relevant to their context.

SUPPORT WIDER PUBLIC HEALTH RESPONSE

Reporting to the national surveillance and disease early warning system; adopting of infection prevention and control practices that are appropriate and contributing to public health messaging using locally agreed, culturally and context relevant materials and methods.

3 Typology

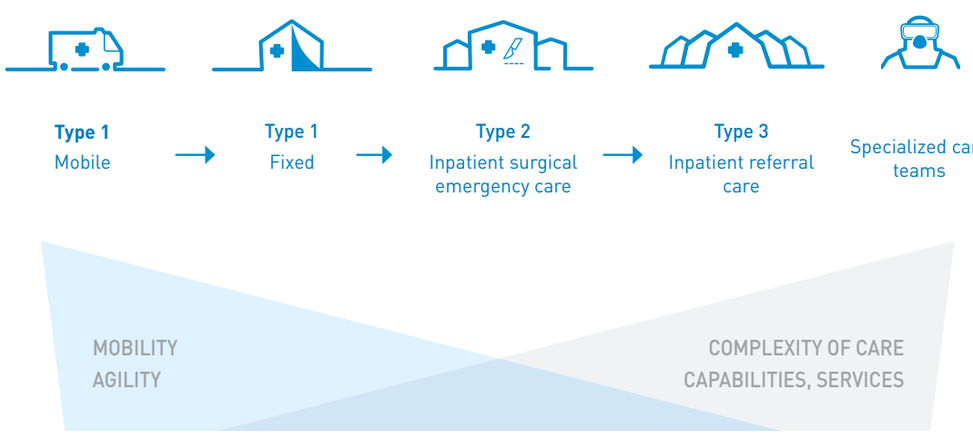
3.1 Introduction

Operating in complex settings brings challenges, which require flexibility and adaptability.

EMTs can be deployed as whole (standardized) or separate (modularized) entities to support specific surge requirements based on identified needs and gaps in capacity and capability.

EMTs can be divided into four different types based on their mobility and level of care provided. The graphic below shows the trade-off between mobility and the level of care that characterizes each of the EMT types.

Fig. 8. EMT typology: relation between mobility/agility and complexity of care, capabilities and services



3.2 Terminology of EMTs

Table 2. Terminology of EMTs

Type 1 Mobile	Provides daylight hours care for stabilization of acute trauma and non-trauma presentations, referrals for further investigation or inpatient care and community-based primary care with the ability to work in multiple locations over the period of a deployment.
Type 1 Fixed	Provides daylight hours care for acute trauma and non-trauma presentations, referrals, and for ongoing investigation or care and community-based primary care in an outpatient fixed facility.
Type 2 Inpatient surgical emergency care	Provides Type 1 services plus general and obstetric surgery for trauma and other major conditions as well as inpatient acute care.
Type 3 Inpatient referral care	Provides Type 2 services plus complex referral and intensive care capacity.
Specialized care teams	Additional specialized care teams that can be embedded in local health-care facilities or Type 2 or Type 3 unless specified otherwise, which can provide the following services: outbreak, surgical, rehabilitation, mental health, reproductive and newborn care, interdisciplinary, interhospital and technical support.

EVOLUTION OF EMT TYPOLOGY

Type 1 split into mobile and fixed

After the typhoon Haiyan (Yolanda) response in the Philippines in 2013 and confirmed in the earthquake response in Nepal in 2015, a distinction was made between a Type 1 mobile and a Type 1 fixed team. This recognizes the large numbers of teams involved in these categories, and the difference in tasking and usage by a ministry of health between these two modalities. Type 1 mobile teams are particularly important after flooding or storms where populations are dispersed in ad hoc shelters and remote villages, and are also useful in responses to small island states. Tasking of mobile teams generally becomes sector coverage rather than single site deployment. The new typology of Type 1 EMTs mobile and fixed was endorsed at the 2nd Global EMT meeting in Panama in December 2015.

Type 2 and 3: clarity on definition of Type 2 and 3 versus surgical teams without facilities.

Few major changes have occurred with Type 2 and Type 3 team definitions, save to clarify that the terms should be reserved for full teams that can provide, if required, a field hospital of the appropriate capacity with the required operational support. Surgical teams without this that plan to deploy inside existing hospitals are now termed "specialized surgical care teams".

Specialized care teams: clarity of modularization and standards that apply to all specialized care teams

In recognition of the need for a more modular or atypical approach according to the local context, the use of specialized care teams to support critical health care gaps has emerged. It has been accepted to adopt the term "specialized care teams" to better capture the nature of the support offered. EMT specialized care teams have been expanded to include technical support teams, such as operations support teams, to cover teams that are deployed to facilitate the work of EMTs, not just those that provide direct care themselves. This is particularly relevant to teams designed to support the repair of clinical systems, clinics and hospitals and support local EMT activities.

3.3 Terminology of EMTs

Table 3 below provides a brief description and key characteristics relating to each EMT type.

Table 3. EMT Guiding principles

EMT GUIDING PRINCIPLES

TYPE	Descriptor	Services	Key characteristics	Minimal bench-mark indicators	Opening hours
Type 1 mobile	Outpatient initial care and referral for further investigation using mobile medical teams in multiple locations and serve hard to reach populations according to the context of the emergency.	• Triage, assessment, first aid • Treatment of trauma and non-trauma emergencies • Stabilization and referral of patients requiring inpatient services and higher levels of care • Primary health care for basic communicable and noncom-municable diseases (NCDs), basic reproductive health services, basic emergency obstetric and newborn care (B-EmONC).	• Light, portable, adaptable • Can work in remote areas to access small communities • Either operating from suitable existing structures or supply their own mobile outpatient facilities, such as tents or specially equipped vehicles as mobile medical clinics. • Expected to have a base of operations allowing resupply and full compliance with all requirements of self-sufficiency, sterility, cold chain and supply chain.	Capable of treating at least 50 outpatients/day	Daytime (shortened clinic times allowing safe travel to and from remote site)
Type 1 fixed	Outpatient initial care of injuries and other health-care needs and referrals for ongoing investigation or care and community-based primary care from a fixed location.	• Triage, assessment, first aid • Treatment of trauma and non-trauma emergencies • Stabilization and referral of patients requiring inpatient services and higher levels of care • Primary health care for basic communicable and noncommunicable diseases and basic reproductive health services (B-EMONC).	• Use light deployable, adaptable facility structure • Must be able to supply their own fixed outpatient facilities, such as tents or special equipped vehicles but can work from suitable existing structures if requested.	100 outpatients/day	Daytime outpatient services but on-call team available to provide life-saving care overnight for emergency cases

TYPE	Descriptor	Services	Key characteristics	Minimal bench-mark indicators	Opening hours
Type 2	Inpatient acute care for medical conditions (communicable and noncommunicable diseases), general and obstetric surgery for trauma and other major conditions and can receive, screen and triage new and referred patients in an outpatient and emergency department type setting.	**Type 1 Services plus:** • Intake/screening of new and referred patients, counter-referral • Advanced life support and initial stabilization • At least 1 operating table • Perform at least 7 major or 15 minor operations daily • Definitive wound and basic fracture management • Damage control surgery • Emergency general and orthopaedic surgery • Maternal and reproductive health services to the level of C-EMONC • Inpatient care for non-trauma emergencies • Anaesthesia, X-ray, sterilization, laboratory and blood transfusion • Rehabilitation services and patient follow up	• Use temporary, deployable and adaptable facility structure • Minimum standards apply to the temporary structure and its support services with available operational support technical standards. • Provide at least 20 inpatient beds but preferably more • Ensure operating theatre environment according to IPC and Hygiene Guidelines[8] • Multidisciplinary team experienced to work in resource scarce settings	>100 outpatients/day One operating theatre with minimum 20 inpatient beds per operating table 7 major or 15 minor operations per day	24 hrs per day/7 days per week (24/7)
Type 3	Complex referral-level inpatient care for medical and surgical conditions and intensive care capacity in a temporary facility of tents, prefabricated buildings or vehicles.	**Type 2 Services plus:** • Capacity to provide primary and stabilization care • Complex reconstructive wound and orthopaedic care • Paediatric and adult anaesthesia • Intensive care beds with 24/7 monitoring and ability to ventilate	• Provide their own structures (field hospital or equivalent). • High-level referral service to Type 1 and 2 teams (both national and international) that cannot provide specialist services. • Reconstructive wound and orthopedic capability but can also include other specific specialist groups and services (for example, maxillofacial, specialist pediatric).	>100 outpatients and >40 inpatients At least 2 operating tables and 40 inpatient beds (20 beds/operating table) 15 major or 30 minor operations per day At least 4 intensive care beds	24 hrs per day/7 days per week (24/7)
Specialized Care Teams	Teams offering care embedded into existing facilities and able to provide the equipment and consumables related to the services they are offering for the entire period of their deployment. The list of specialties is not exhaustive and establishing minimum standards for different specialties is an ongoing process developed in various EMT technical working groups.				

[8] MINIMUM REQUIREMENTS for infection prevention and control programmes-WHO 2019; https://www.who.int/infection-prevention/publications/min-req-IPC-manual/en/

3.3.1 Speed, timing and duration of deployment

Rapid response in sudden onset emergencies increases the chances of survival and lessens morbidity. It has also become clear that medical teams providing treatment and isolation are required as early as possible in an outbreak to improve confidence within the community and help lower the burden on non-dedicated outbreak health facilities. While teams can still self-declare their time to deploy, it is expected that all types are able to demonstrate the ability to deploy and become operational in the field within 72 hours of a disaster (note, this is not within 72 hours of a decision to deploy, or a decision to accept teams) in order to provide a coordinated response and referral chain. Larger teams must be even better prepared given their weight, volume and complexity of movement and their vital role in secondary and tertiary level care, reconstructive and rehabilitation services.

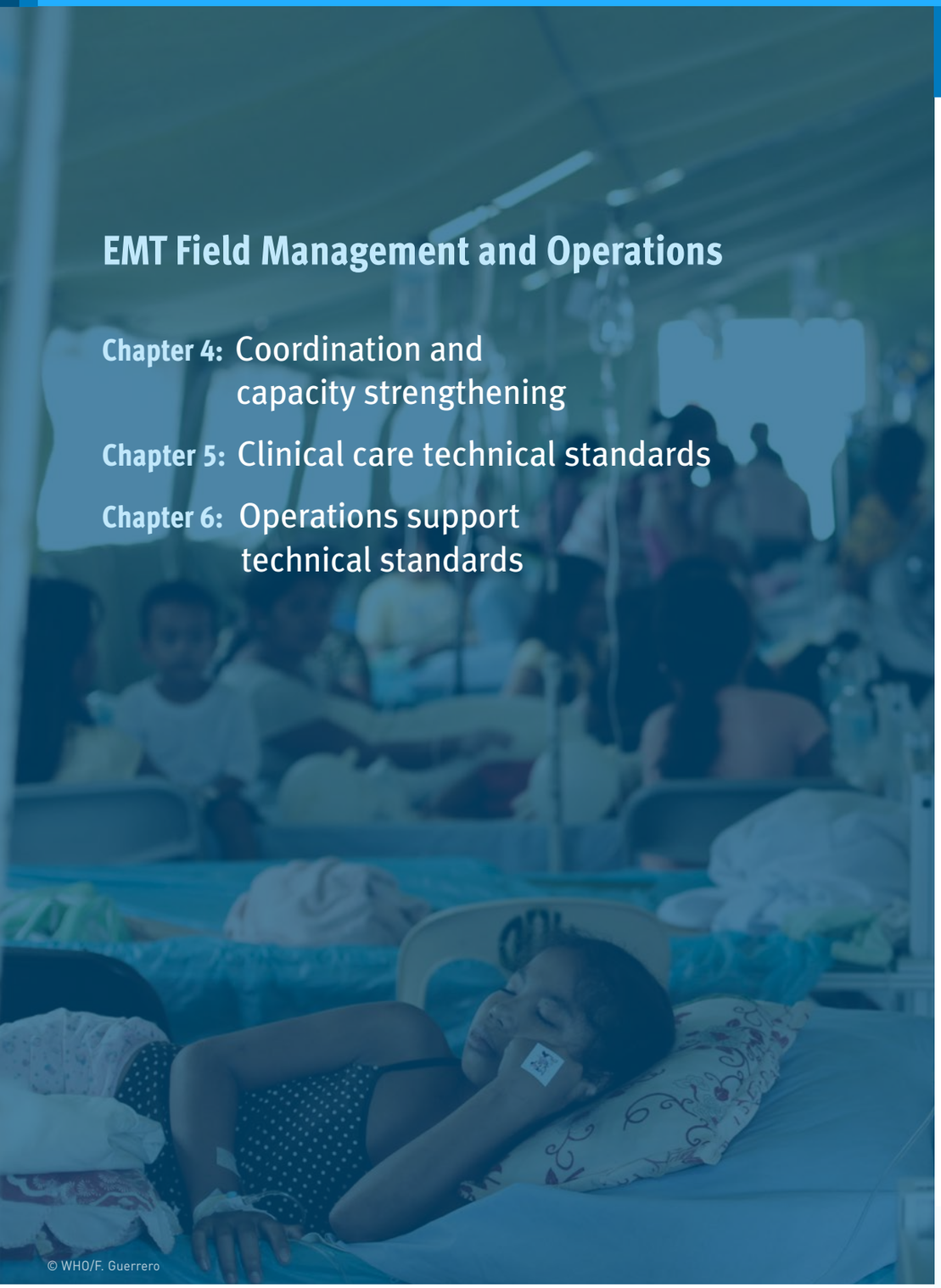
The table below outlines the speed, timing and duration of deployments per type of EMT. It refers to the speed and timing in which all EMTs are required to establish services from time of arrival at the field site allocated to them as well as pointing out the minimum period of time they need to be operational for. This is subject to change should subsequent rotations be requested by the ministry of health.

Table 4. Speed, timing and duration of deployments

Type of team and origin	Operational from arrival to affected area by at least:	Field operational with ability to offer at least an extend subsequent rotation for at least:
Type 1 Mobile or Fixed	24 hours	2 weeks
Type 2	24–36 hours	3 weeks
Type 3	36–48 hours	4 weeks
Specialized care teams	variable	variable

Note: timelines for speed of deployment are given as an estimation.

National teams may justifiably be required to respond faster with most being expected to deploy in 6–12 hours as first responders being self-sufficient for a shorter period and with shorter travel times.



EMT Field Management and Operations

Chapter 4: Coordination and capacity strengthening

Chapter 5: Clinical care technical standards

Chapter 6: Operations support technical standards

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4 Coordination and capacity strengthening

4.1 Introduction

In today's multilateral response environment, coordination is at the heart of an effective rapid response to health-related emergencies and for the delivery of humanitarian assistance. Governments have a primary role and responsibility in institutionalizing national or subnational health capacities for coordinated responses. For most sudden onset disasters, disease outbreaks or civil conflicts, national EMTs (N-EMTs) are almost always better placed to provide immediate assistance to those in need. During large-scale emergencies, however, national authorities may turn to international responders for additional help, bringing in well-trained, self-sufficient EMTs to temporarily supplement national health resources or assist with a surge in health-care requirements. Training in the coordination of all EMTs – both national and international – avoids duplication of effort and waste of resources, ensuring effective help reaches the greatest number of victims and saves the most lives.

During the 2013 Typhoon Haiyan (Yolanda) response in the Philippines, for the first time the EMT Classification and Minimum Standards were applied with demonstrable benefit to coordination.[9] WHO and the Department of Health worked together efficiently establishing an online medical coordination centre for referrals and information-sharing and facilitating access for less-equipped EMTs, to procedures such as X-rays, elective surgery and laboratory tests.[10] More explicit EMT coordination, with defined registration and tasking processes, was employed during the 2014–2015 West Africa Ebola Outbreak and the 2015 Vanuatu Cyclone Pam responses. During the 2015 Nepal earthquake response, a formal EMT Coordination Cell (EMTCC), led by the Ministry of Health and Population and supported by WHO, was established and utilized with very positive feedback from national authorities and EMT responders. Having recently been trained in EMTCC methodology by WHO, Ecuador's Ministry of Public Health was well prepared and able to deploy 22 N-EMTs within hours of a 7.8-magnitude earthquake that struck the country in 2016. They were assisted by seven international EMTs (I-EMTs). The response highlighted the importance of preparation, as the training on EMTCC allowed for near optimal application and set up of the EMTCC by the ministry for the smooth coordination of all deployed EMTs.

[9] Brolin K, Hawajri O, von Schreeb J. Foreign Medical Teams in the Philippines after Typhoon Haiyan 2013 - Who Were They, When Did They Arrive and What Did They Do? PLoS Curr. 2015;7: ecurrents.dis.0cadd59590724486bffe9a0340b3e718. Published 2015 May 5. doi: 10.1371/currents.dis.0cadd59590724486bffe9a0340b3e718

[10] The Regulation and Management of International Emergency Medical Teams; WHO and IFRC 2017; https://extranet.who.int/emt/guidelines-and-publications

4.2 EMT Capacity strengthening

4.2.1 National disaster management and emergency health preparedness and response

All countries are encouraged to strengthen their capacities for health emergency and disaster risk management. This includes adequate preparation and operational readiness to scale up service delivery, including pre-hospital and clinical services to meet increased health needs in the event of an emergency with health consequences. The set-up, reception and coordination of national and international medical teams support the level of predictability and responsiveness required within the disaster management cycle. The establishment of regional emergency networks between countries can support mutual learning and identify mechanisms to speed up response time. Additionally, the Global Classification of EMT providers can contribute to expediting requests for and deployments of EMTs committed to meeting agreed standards, including registration with relevant national authorities of the host country, who are the only body with the legitimate authority to accept or refuse a responding EMT.

The assessment of country capacity to ensure the overall coordination of responding EMTs (both national and international) and the quality of care provided, should include as a minimum the following elements:

- legal framework as a set of legislations, regulations and norms to support the development of N-EMTs and implementation and maintenance of the EMT coordination mechanism;
- adoption of the EMT minimum standards and related required technical standards at national level;
- identification of National EMT focal point(s) and definition of a strategy to train personnel on EMT/EMTCC;
- establishment and regular testing of standard operating procedures (SOPs) for the EMT coordination mechanism; and
- definition of clear processes and protocols for EMT reporting.

4.2.2 Adoption of EMT principles

National governments need to adopt core and technical standards specific to their country context to ensure national teams are not only able to respond, but also be in a position to receive assistance if required.

The limited initial information on the impact of an event and imprecise assessment of the national capacity to respond mean that caution should always be exercised by the national authorities before concluding that no external medical assistance may ever be needed. In fact, external specialized medical and public health expertise could facilitate and support the national health system to deliver life-saving and specialized services, such as rehabilitation, spinal injuries care, burns care, or outbreak response.

4.2.3 Investing in national EMT capacity: systems, staff, supplies and equipment, structure and space

Building and strengthening EMT capabilities ensures the maintenance of a ready workforce for efficient and effective emergency response. EMTs should work to achieve and maintain EMT minimum standards, combined with the highest possible level of readiness. Capacities are assessed and strengthened based on the main components of health-care system readiness, the four S's of surge capacity (systems, staff, supplies and equipment, structure and space). EMT minimum standards guide and support the analysis and identification of the following.

- Systems (SOPs, protocols): policies, SOPs and protocols that define the operating model of each medical team, including timely mobilization, self-sufficiency, ability and limitations in implementing technical standards of care and interaction with other emergency response stakeholders.
- Staff (capability, sufficiency and training): professional skills and practice, the number of personnel required and available to support the delivery of services, routine and just-in-time training opportunities to increase professional skills, and practice and confidence.

- Supplies and equipment: development and maintenance of medical and operational support cache including medical equipment, consumable medical equipment, pharmaceuticals and nonmedical supplies needed to provide clinical care in line with the EMT types and taking into consideration logistics and other possible constraints.
- Structure and space (physical structures, temporary facilities): appropriateness and accessibility of the facility to support necessary clinical care, the availability and repurpose of inpatient beds and support for specialized care needs.

This model builds on the capacity of the teams and enhances national capacity to coordinate them, thus contributing to an overall level of preparedness and operational readiness.

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Table 5. Preparedness and readiness

Preparedness and readiness			
Systems	**Staff**	**Supplies and equipment**	**Structure and space**
Institutional Endorsed and resourced policy/strategy, SOPs, contingency plans, preparedness for response Security management, medevac and critical incident management **Operational** Established and functional operational mechanisms, supply chain systems, databases and tools required per EMT type	**Readiness** Recruitment, training and retention of an adequate number of skilled staff to maintain functional roster **Mobilization** Sufficient number of deployable skilled staff based on needs and requirements per EMT type and with clarity of roles and responsibilities. **Operational** Suitable number of skilled staff available and deployable to cover requirements for rotation of key services per EMT type	**Resources** Water, fuel, electricity, communications, transportation **Staffing and patients** Accommodation (shelter/beds/tents), personal equipment and supplies, food stock and general supplies **Equipment** Clinical, logistics, water, sanitation and hygiene (WASH), sequential build **Pharmacy and medical consumables and supplies** Pharmaceutical and medical consumables, medical equipment	**Land space** Field site sufficient to deliver services and accommodate staff as per EMT type (scalable if required) **Facilities** Supply mobile and/or temporary field tents, medical structures, shelter or similar prefabricated structures appropriate to local climate as per type of EMT (with adaption to work inside or next to existing facilities if requested). **Facility specificities** All water and sanitation, shelter, non-food and food requirements to serve patients and staff as per EMT type (with sufficient access to resupply without impacting local area) **Facility support services** Adequate infrastructure support services in place to set up, maintain, and demobilize as per type of EMT
Capacity and capability to resupply			

4.3 Role of WHO in supporting national health authorities (ministries of health)

4.3.1 Methods to amplify Member State requests for international assistance, respect for sovereignty

In line with the key principles of international law, only the government of an affected country can make the decision whether to accept or reject EMTs. The EMT Secretariat and the relevant regional counterpart will be heavily involved in the necessary supportive activities to facilitate the rapid deployment of EMTs and the establishment and operationalization of the EMT coordination mechanism at the outset of an emergency. These supportive activities include: providing remote or in-country technical support; advising on EMT capability available within the EMT Global Classification; activating the online registration system Virtual On-Site Operations Coordination Centre (Virtual OSOCC); help in disseminating essential information about the arrival and registration procedures to all international EMTs (including those already in-country); and making this available at all potential points of contact with EMTs, including the WHO EMT website.

4.3.2 Reception and departure centre

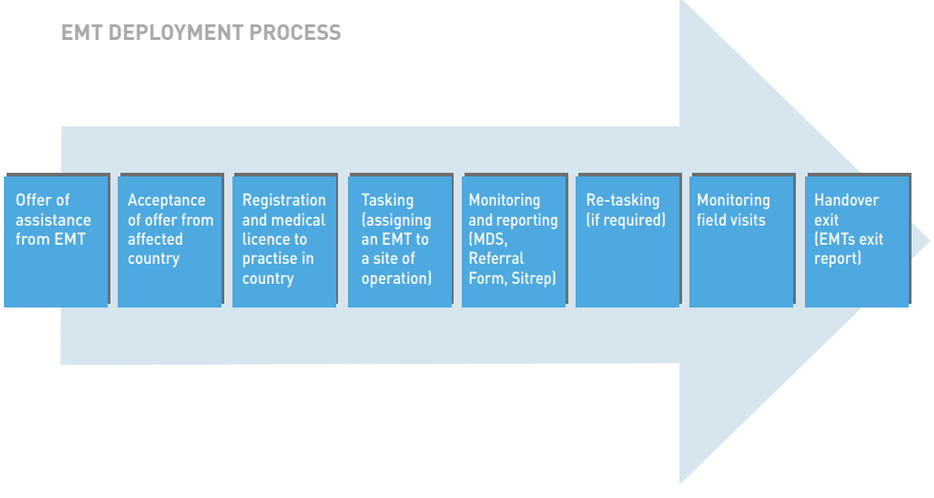
As the first contact point for incoming international assistance, the RDC needs to be established in a systematic manner that imparts a level of organization in the chaotic environment of the disaster. The RDC is set-up at major entry points for international assistance ideally by national authorities with support, if required, from the United Nations Disaster Assessment and Coordination (UNDAC) team, INSARAG trained search and rescue team or EMT with a view to guiding arriving teams to the relevant coordination mechanism for further actions (registration and tasking).

4.4 Activation of EMTs

Any medical team (national, international, civilian, military or NGO) providing direct clinical care in emergencies has the potential to save lives, but also to do harm, if not working to agreed medical standards, using safe medications and equipment, and with trained staff.

The decision to request the support of EMTs is a vital prerequisite for their deployment. Ideally, national EMTs should confirm their status (availability) and capability as per the National Disaster Response Plan. In the event that a formal request for international assistance is issued, EMTs should submit a formal offer of assistance and deployment should only occur once the offer of assistance has been accepted and approved.

Fig. 9. EMT deployment process



The EMT deployment process is a critical step in the initial phase of any emergency response. Filtering incoming EMTs according to capability and identified needs and having an accurate account of the overall EMT capacities (current and anticipated), including EMT type, services and operational support capabilities, are essential for optimal planning to meet the varied and specific needs of the affected population. The ministry of health retains the right in almost all instances to licence and register arriving medical teams and deploy them where they are most needed.

Tasking is the process of assigning EMTs to a specific site of operation based on the type of EMT and capabilities and the identified needs or gaps, which allows for optimal resource utilization. During the earthquake response in Nepal (2015), a "hub and spoke" model was used to place larger teams at strategic and district focal points with smaller teams (both fixed and mobile) fanning out from these points. The strategic location for each hub was chosen based on previously existing health facilities or areas with high trauma load. The smaller Type 1 EMTs, both fixed and mobile, were dispatched to more remote areas where they assessed the level of risk exposure and whether to treat trauma cases on site, refer them to a higher level of care, such as the district hospital if the case was manageable at that level, or on to tertiary care.

EMTs should be requested to participate in periodic reporting, which may be daily in the acute phase of the emergency and transitioned to weekly after the situation has stabilized. EMT reporting should be conducted using a standardized form. Standardized reporting allows for meaningful aggregation of reports across EMTs, which is required for timely situational overview. To meet universal demand, WHO set up a technical working group in 2016 and published a package of essential data items for EMT reporting, namely Minimum Data Set[11] (MDS) and its daily report form. This form should be reviewed and adapted to suit the context of the emergency and integrated with existing national reporting forms.

[11] https://www.springerprofessional.de/en/breakthrough-on-health-data-collection-in-disasters-knowledge-ar/17739664

4.5 EMT Coordination

4.5.1 Coordination of operations within the incident management structure

A functional health Emergency Operations Centre (EOC) is the key to successful response and recovery operations. It ensures the management and coordination of a response to emergencies from all hazards, and an identified decision-making mechanism and procedures for activation, escalation and deactivation of emergency operations. Standard functions of the health EOC include management, operations, planning, logistics and finance/administration.[12] The operations function (health operations) ensures better coordination of services and that monitoring and availability of required medical and health resources are in place. This encompasses a range of health-related disciplines, including pre-hospital care, primary care, medical and surgical specialties, infectious disease management, surveillance, laboratory services and risk communication.

EMT coordination should occur within existing emergency response frameworks and if possible be led by the emergency response sections of the ministry of health, within the health operations pillar of the health EOC. This serves as the central coordinating point for obtaining and analysing key event-related information, such as health infrastructure damage and impact on pre-existing services to inform strategic and operational decisions. The core purpose of EMT coordination is to ensure that the surge of responding EMTs, both national and international, best meet excess health-care needs resulting from increased morbidity or from damage to existing capacity. EMT coordination focuses on clinical care and clinical coverage, patient referral and transport, and logistics and operational support to health-care facilities.

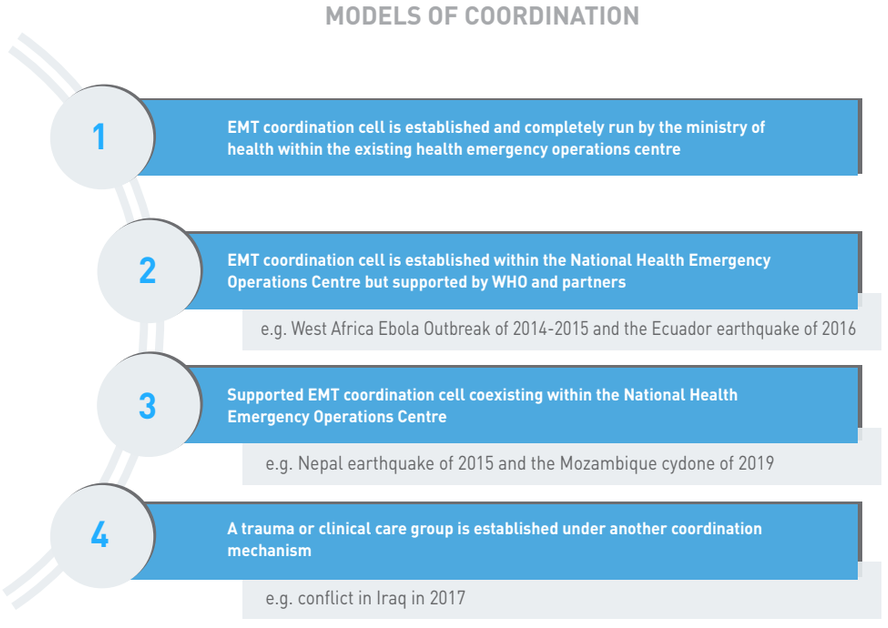
This EMT function may require WHO experts to support arriving EMTs, United Nations Disaster Assessment and Coordination (UNDAC) team members, or direct bilateral expert deployments from neighbouring countries. Some international agencies and international NGOs may deploy EMTs and other health and thematic experts, such as in the areas of WASH and shelter or gender-based violence.

[12] A Systematic Review of Public Health Emergency Operations Centres (EOC); WHO 2013; https://www.who.int/ihr/publications/WHO_HSE_GCR_2014.1/en/

4.5.2 Models of coordination

The nature and the scale of emergencies may entail different models of coordination to ensure additional in-country and international actors are factored into the response coordination mechanism. The options below in Fig. 10 are identified for EMT coordination.

Fig. 10. Models of coordination



4.5.3 Additional channels for coordination

Existing international and cross-border cooperation agreements concerning emergency preparedness and response can facilitate the provision of mutual assistance on a bilateral basis. In this instance, adoption of technical standards is recommended as is applying the steps described for the activation of EMTs.

Military organizations are often key resources in a national disaster management plan. Many governments also have military medical teams that are increasingly active in disasters and outbreaks. A channel of acceptance and initial coordination is respected, but if military medical teams are providing direct care to the local population, they need to be coordinated through the EMT coordination mechanism in order to understand how all other medical actors are contributing to the response, local protocols and referral pathways. Rather than provide a barrier, this mechanism, including fast-track registration processes, is proving useful in clarifying needs on the ground and contributes to a single tactical-level coordination system for medical care.

International support provided by the Red Cross and Red Crescent in non-conflict disasters is also given upon the request of the national society of the affected country and in support of fulfilling its existing national mandate. One of the provisions of the Red Channel Agreement signed between WHO and International Federation of Red Cross and Red Crescent Societies (IFRC) in December 2020, ascertain that IFRC Emergency Response Units responding to emergencies will register with local authorities and the existing EMT coordination mechanism upon arrival in-country.

4.6 Monitoring and reporting during deployment

Regular monitoring and reporting are essential to enable EMT coordination to better maintain quality of care during deployments. Field visits and Minimum Data Set (MDS) data analysis are practical ways to monitor EMT operations and help to identify challenges and tackle these through collective evaluation and response.

Field visits to EMT sites of operation should be undertaken when operations are reasonably well established and should not only focus on verification of EMT operations (quality assurance) but also on providing support and guidance. The three main objectives of field visits are as follows:

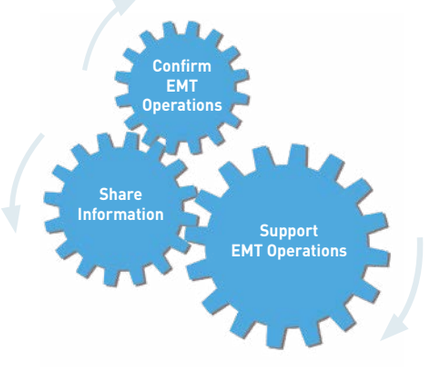
1. Share information, including district and overall situation updates, new or updated SOPs and guidelines.

2. Confirm EMT operations, including:
   a. site of operation (compared to allocated site);
   b. type(s) of service (compared to declared type and services);
   c. compliance with minimum standards, including medical record keeping, reporting and referral requirements;
   d. compliance with recommended or national treatment protocols;
   e. acceptance from the community;
   f. integration with local services providers and coordination mechanisms; and
   g. exit strategy, including anticipated date of departure.

3. Support EMT operations including:
   h. feedback on potential improvements (including addressing minimum standard shortfalls);
   i. updated guidelines or treatment protocols;
   j. assistance with any operational issues, such as referral gaps, logistical needs, or safety and security; and
   k. coordination of other complementary assistance needed by the affected population, as identified by EMTs, such as food distribution, non-food items, water and sanitation.

Fig. 11. The three objectives of monitoring field visits

THE THREE OBJECTIVES OF MONITORING FIELD VISITS



Documentation and observation of variance or compliance with national protocols and EMT minimum standards form the basis for analysis of the quality of services delivered and must be based on carefully documented information.

5 Clinical care technical standards

5.1 Introduction

The adoption of clinical care standards has the potential to improve the quality of care provided to patients, reducing unwanted variations in care, harm and inefficiencies. It also has the potential to protect professionals. The clinical care technical standards vary according to EMTs type.

There are 27 clinical standards, as displayed in Table 6 below, representing support and key clinical processes. Key clinical processes consist of the act of providing care per se, while the support processes provide support or key elements/actions to the provision of care.

Table 6. Clinical standards

CLINICAL STANDARDS

SERVICE	TYPE 1 MOBILE	TYPE 1 FIXED	TYPE 2	TYPE 3
Triage	Initial and field triage	Initial and field triage	Surgical triage	Complex referral triage
Assessment, resuscitation and stabilization	Basic resuscitation and stabilization	Basic resuscitation and stabilization	Advanced life support airway management	Intensive care level management, assisted ventilation available
Referral and transfer	Basic stabilization and referral	Basic stabilization and referral	Acceptance of referral, advanced stabilization and referral	Acceptance of referral, assisted ventilation intensive care referral
Ward management	Not applicable	Basic nursing care	Adequate professional medical care	ICU specialist care
Wounds	Initial wound care	Initial wound care	Full surgical wound care	Complex reconstructive wound care
Burns	Burns first aid, pain relief	Superficial burns of ≤ 5% Total Body Surface Area (TBSA)	Burns of ≤ 20% TBSA	All burns > 20% TBSA burns to face, hands, perineum, genitals and soles of feet
Fracture management	Basic fracture management	Basic fracture management	Advanced fracture management/ surgery	Definitive and complex orthopedic care

SERVICE	TYPE 1 MOBILE	TYPE 1 FIXED	TYPE 2	TYPE 3
Spinal cord injuries	Assessment and transfer	Assessment and transfer	Respiratory support and transfer	Complex care
Communicable diseases	Screening for and identification	Isolation facilities	Inpatient capacities	Complex cases requiring intensive care
Noncommunicable diseases	Basic outpatient chronic disease care	Basic outpatient chronic disease care	Inpatient care of acute exacerbations	Advanced/intensive care management of emergency exacerbations
Reproductive, maternal and newborn health-care	Basic emergency obstetric and neonatal care (B-EmONC)/sexual and reproductive health	Basic emergency obstetric and neonatal care/ sexual and reproductive health	Comprehensive emergency obstetric and neonatal care (C-EmONC)/sexual and reproductive health	Comprehensive emergency obstetric and neonatal care/ sexual and reproductive health with intensive care support
Child health	Basic outpatient paediatric care and stabilization, nutrition screening	Basic outpatient paediatric care and stabilization, nutrition screening	Emergency inpatient and outpatient pediatric care and and stabilization, paediatric surgery, management of malnutrition	Care of critically ill children, complex paediatric surgical care, paediatric and neonatal intensive care
Analgesia and anaesthesia	Local anaesthesia and pain control	Local anaesthesia and pain control	Paediatric and adult regional, spinal and general anaesthesia	Capacity for extended post-operative (Inter-mediate) care including ventilation
Intensive care	Not applicable	Not applicable	Not applicable	Intensive care available
Surgery and perioperative care	Minor procedures with local anaesthesia	Minor procedures with local anaesthesia	General surgical care	Specialized and advanced trauma and reconstructive surgical care, (including orthoplastic and maxillofacial surgery)
Malnutrition	Screening, initiation ambulatory treatment	Screening, initiation ambulatory treatment	Initial clinical management of cases with medical complications	Neonatal and paediatric intensive care, complex cases care
Palliative care	Initial palliative care with referral	Initial palliative care with referral	Symptom control, including palliative surgical care; end of life care support	Symptom control, including palliative surgical care; end of life care support
Rehabilitation	Basic rehabilitation care	Basic rehabilitation care	Outpatient and inpatient rehabilitation services	Outpatient and inpatient rehabilitation services for complex trauma patients

SERVICE	TYPE 1 MOBILE	TYPE 1 FIXED	TYPE 2	TYPE 3
Mental health and psychosocial support	Assessment, psychosocial first aid, referral if indicated			
Blood transfusion services	Not applicable	Not applicable	Safe blood transfusion capability	Safe blood transfusion capability
Laboratory services	Basic outpatient testing; Rapid diagnostic tests	Basic outpatient testing; Rapid diagnostic tests	Basic inpatient testing	Advanced testing
Medical imaging and reporting	No diagnostic imaging	No diagnostic imaging	X-ray	X-ray, eFAST* ultrasound
Clinical pharmacy and consumables	Outpatient drug supply for declared capacity, tetanus prophylaxis	Outpatient drug supply for declared capacity, tetanus prophylaxis	Inpatient and outpatient drug supply including surgical and anaesthetic drugs[13]	Intensive care level drug supply
Sterilization	Basic steam autoclave (at base) or disposable material	Basic steam autoclave or disposable material	Complete surgical autoclave with traceability	Complete surgical autoclave with traceability
Infection prevention and control (IPC)	Appropriate protocols for adequate Infection, prevention control at the facility			
Health promotion and community engagement	Management according to principles[14] of community engagement			
Chemical, biological, radiological and nuclear (CBRN), toxicology and toxinology	Assessment, decontamination where possible, first aid and referral	Assessment, decontamination where possible, first aid and referral	Provision of antidotes if available	ICU care if safe and appropriate
Medical information management	EMTs will keep confidential patient records of interventions, clinical monitoring and possible complications of care received, with a copy available to the patient, as well as reporting regularly and prior to departure to the relevant local health authorities using national reporting forms, or if not available, the agreed EMT Minimum Data Set (MDS). Teams undertake not to conduct research without appropriate consent of the patient, national authorities and ethical committee.[15]			

* Extended Focused Assessment with Sonography for Trauma (e-FAST)

[13] WHO model list of essential medicines- 21st list ,2019 WHO/MVP/EMP/IAU/2019.06?

[14] Principles of Community Engagement 2nd Edition; https://www.atsdr.cdc.gov/communityengagement/pdf/PCE_Report_Chapter_2_SHEF.pdf 15 https://www.who.int/ethics/Ethics_basic_concepts_ENG.pdf

[15] https://www.who.int/ethics/Ethics_basic_concepts_ENG.pdf

5.1.1 Triage

EMTs have established triage systems for prioritizing patients by clinical need. This includes day-to-day service provision as well as mass casualty situations.

Each EMT has adopted a triage system that allows prioritizing and classifying patients according to the type and urgency of their conditions. The chosen triage system must ensure each patient has a unique patient identifier. Specific attention is given to infectious disease presentations and mass casualty incidents where the triage system must be adapted to ensure better management and classification of patients.

MINIMUM TECHNICAL STANDARD

1. Establish a single-entry point for patient presentation with consideration for safety and security.
2. A unique identifier system should be in place that takes into account patient follow-up care and protection issues.
3. Provide education and training to all relevant staff on triage systems and protocols and appoint a dedicated staff member during each shift, taking training and experience into consideration.
4. Establish a dedicated triage system for mass casualty situations and guarantee a continued reassessment of patients.
5. Have a validated and rehearsed Mass Casualty Management (MCM) plan.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. During response to mass casualty incidents, consider adding a triage category for those patients with poor prognosis or limited possibilities of survival if culturally acceptable. For these patients, adequate pain management and comfort care need to be provided.
2. Interpreters should be available at the triage area and cultural aspects such as separation of gender in waiting areas should be respected (if applicable).

5.1.2 Assessment, resuscitation and stabilization

EMTs provide a systematic assessment of patients and have the capacity to stabilize and resuscitate when needed and appropriate, according to the capabilities of the EMT.

Each EMT systemically assesses and treats their patients. If a patient needs a higher level of care, the teams stabilize and refer the patient to a facility that can provide adequate care. While teams might be experiencing scenarios in which resuscitations might become necessary, the decision to provide this procedure needs to be adapted to the context. Clear protocols need to be in place to ensure that in case of patient resuscitation safe transport and adequate onward treatment is guaranteed.

MINIMUM TECHNICAL STANDARD

1. EMTs can ensure basic resuscitation and stabilization
   - Basic life support for adults, neonates and children, without endotracheal intubation.
   - Provide initial treatment including naso- or oro-pharyngeal airway, Bag-Valve-Mask Ventilation, provide oxygen, IV access/fluid, basic haemostatic measures, basic prevention of hypothermia.

   Type 2 and 3
   - Provide advanced airway management (endotracheal intubation and surgical airway) with capnography.
   - Provide oxygen (up to 10 L/min) to multiple patients simultaneously with advanced resuscitation measures as emergency surgery.
   - Blood transfusion (see chapter fluid resuscitation)

   Type 3
   - Provide mechanical ventilation in an intensive care setting as considered appropriate to the context within which the team is working.
   - Accept referrals from other facilities for specialized (further) treatment.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. **Type 1 Fixed**
   - Laryngeal mask or endotracheal intubation, in which case basic capnography is needed.

5.1.3 Referral and transfer

EMTs must have protocols in place for patient referral and transfer to deliver quality care outcomes for patients through effective coordination between referring and receiving health facilities and ensuring safety and protection aspects for staff and patients.

Effective set up of patient referral and transfer processes are considered one of the fundamental aspects of quality patient care. EMTs should ensure that patient referral and transfer is bolstered by clear transportation and communication channels as well as compliance and accountability mechanisms between referring and receiving health facilities. Safety and risk mitigation measures should be in place for the protection of staff and patients. Staff involved should be well versed in applying such protocols and procedures to reduce inappropriate system use.

MINIMUM TECHNICAL STANDARD

1. Establish a standardized form and system for patient referral and transfer including formal handover between the transferring and receiving EMT/health facility.
2. Responsibility for the patient remains with the transferring EMT staff until handover is carried out with the receiving EMT/health facility.
3. Communicate benefits and risks involved prior to transfer and obtain written and informed consent from patient or relatives.
4. Share information in a written document on patient's clinical condition, current treatment, intention to transfer, mode and timeline of transfer.
5. Carry out thorough preparation and stabilization of patient, following the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) principles prior to transfer.
6. Ensure adequate pain management before initiating transport of patients.
7. Take extra measures before transport, including IV, access, analgesia/ anaesthesia, chest tubes, secured airway, and fracture immobilization if necessary.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Staff accompanying critical patients should be experienced and suitably trained in patient transfer and management of advanced cardiac life support, airway management and critical care.

Guidance Notes

Consider context, availability, suitability (ground, air) and contingency plans to identify the appropriate mode(s) of transport.

5.1.4 Ward management

EMTs have systems in place for the safe management of patients admitted to their facility.

While inpatient capacity is only required for Type 2 and 3, Type 1 fixed need to be prepared to take care of patients for an extended period of time while referral is being arranged. Medical supervision must be available 24/7, either on the wards or through an on-call system. Staff must have relevant training and experience for their assigned function, such as paediatric nurses allocated to paediatric patients.

MINIMUM TECHNICAL STANDARD

1. Type 1 fixed must ensure basic nursing care with capacity to observe/care for patients while arranging referral.
2. Process established for selecting patients for admission and regular follow up of their status including mechanisms to promptly detect deteriorating patients.
3. Systems in place for structured shift handover and multidisciplinary ward rounds.
4. Ensure information flow to patients and relatives including timely notification about readiness for discharge from facility.
5. Train patients, family members or caregivers in tasks they might need to take on.
6. Protocols for transfer and referral of patients that need a higher level of care, specialist or follow-up/long-term care. Provide documented discharge planning and follow-up care
7. Hand out a discharge document/copy of patient record to the patient.
8. Assist with arranging transport, follow-up care if necessary, access to medication provided, rehabilitation, wheelchairs or crutches or other aids as needed.
9. Ensure visiting arrangements, if needed, with adapted agreements for paediatric or intensive care patients.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

(!) 1. Minimum nurse–patient ratio of 1 : 8 in every shift
(!) 2. Minimum doctor–nurse ratio of 1 : 3
(!) 3. Type 1 Fixed: at least three doctors trained in emergency and primary care

(!) This symbol refers to minimum requirements for international deployments in particular for teams seeking global classification status.

5.1.5 Wounds

EMTs provide wound care, particularly focusing on prevention of infection and functional outcomes.

Wound care may form the bulk of the workload for EMTs deployed in the early phase of a sudden onset disaster. EMTs follow appropriate clinical guidelines[16] for the management of patients with delayed presentation of wounds, adapted to the specific mechanisms of trauma related to the event.

MINIMUM TECHNICAL STANDARD

Initial wound assessment and cleaning

- Clean wounds according to current guidance.
- Provide tetanus immunoglobulins and vaccination and antibiotic therapy as required.
- Consider discharge environment and use dressings appropriate to context.
- Document and provide dressing care plans if follow-up is required.
- Remove devitalized and/or contaminated tissue. Surgical debridement is only performed in appropriate settings (operating theatre) with safe sedation and anaesthesia.
- Consider split skin grafting/basic flaps or repeat wound debridement after appropriate cleaning +/- debridement and review. These procedures should be performed in Type 2 or equivalent.
- Consider referral for complex reconstruction of massive wound defects once adequate debridement and sepsis control is performed. Referral pathways and communication for these services need to be identified (Type 3 or equivalent).

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Rabies vaccination available for those settings where rabies is endemic and risks for animal bites are eminent.
2. For settings with large demands on wound care, establish dedicated wound areas where patients have direct access for their follow-up care.

[16] Management of Limb Injuries during disasters and conflicts; https://extranet.who.int/emt/guidelines-and-publications

5.1.6 Burns

EMTs should have the capability to manage initial presentations of burn-injured patients including burn mass casualty incidents, rule out other major injuries and begin appropriate burns care while waiting for transfer to a burns centre or other facility.

The nature of burn injuries often results in a protracted clinical journey for the patient, commonly resulting in long-term health consequences affecting function, quality of life and mental health. EMTs must be capable of offering initial care to burn-injured patients including the appropriate triage, first aid, secondary and tertiary assessments and treatment, such as appropriate dressings, pain relief and fluid management as indicated. All EMTs must be aware of the local and national protocols for burns care, and the appropriate referral pathways for burns patients in their area of work.

MINIMUM TECHNICAL STANDARD

1. All EMTs can ensure burn care and referral

   Type 1 Mobile

   - Triage and institute burns first aid and provision of pain relief.

   Type 1 Fixed

   - Treat superficial burns of up to 5% TBSA (no surgery).
   - Provide burns >5% TBSA with pain relief, cleaning, dressings and refer to higher level of care according to local burns referral policies.

   Type 2

   - Treat burns of up to 20% TBSA
   - < 20% TBSA: surgical scrub, fluids (oral and intravenous), limb positioning, excision and grafting, emergency procedures, nutritional support and early rehabilitation.

   Type 3

   - Treat all burns > 20% TBSA
   - Manage burns to face, hands, perineum, genitals and soles of feet
   - Burns specialist teams may be required to supplement Type 3
   - Context may require referral to burns specialist centre(s)

2. If early excision and grafting is undertaken at the facility, the patient's care should continue, and transfer should occur only if the clinical course deteriorates.

3. Calculate recommended administered fluid regime from time of arrival at the EMT/health facility.[17]
4. Encourage oral fluid as appropriate. In the event of a mass casualty incident, burn injured patients should not routinely receive intravenous burn resuscitation fluid at the scene.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Encourage early rehabilitation for all patients with burn injuries with support from rehabilitation specialists.
2. Rehabilitation specialists are potentially well-suited to take over the care of burns patients once surgical intervention and wound care are completed. When indicated, rehabilitation, including active and passive exercises and functional retraining, should commence at the earliest phase of care, once vital functions are stable and precautions are considered.

Guidance Notes

- Inhalation[18]/ heat injury may cause massive swelling of the upper airway which can develop over a matter of several hours as fluid resuscitation is ongoing.
- Monitor the respiratory status closely as a deterioration will likely lead to emergency airway management/referral.
- Patient distribution from the scene and onward patient flow has been clearly evidenced as being integral to efficient use of health resources and improved patient outcomes in mass casualty incidents.

[17] Recommendations for burns care in mass casualty incidents: WHO Emergency Medical Teams Technical Working Group on Burns (WHO TWGB) 2017-2020; https://www.sciencedirect.com/science/article/pii/S0305417920304599

[18] Dries DJ, Endorf FW. Inhalation injury: epidemiology, pathology, treatment strategies. Scand J Trauma Resusc Emerg Med. 2013;21:31. Published 2013 Apr 19. doi:10.1186/1757-7241-21-31

5.1.7 Fractures and limb injuries

EMTs provide fracture and limb injury care within the scope of their capabilities, with referral to other facilities for further diagnostics, care or follow up.

EMTs follow appropriate clinical guidelines[19] for the management of patients with fractures and limb injuries. Adequate fracture care includes a plan for continuation of care, understood by the patient, including a clear plan of referral and follow up by another EMT or local health facility as needed. This follow-up care may range from simple removal of a splint or cast to removal of external fixation or rehabilitation and prosthetic fittings post amputation.

MINIMUM TECHNICAL STANDARD

1. Refer patients in need of surgical intervention to a Type 2 or 3 equivalent facility
2. Fracture management
   - Immobilize the fracture in a good position, mostly by application of plaster of Paris (back slabs for initial treatment, no circumferential casts).
   - Include effective pain management.
   - Any device inserted, such as an external fixator, needs to be removed by the operator or a reliable follow-up secured.
3. Amputation
   - Use objective scoring systems that predict the likelihood of limb survival, such as the Mangled Extremity Scoring System[20] and document the decision process.
   - Achieve clear and written consent from patient and/or guardian before performing amputation taking sociocultural, religious, economic and ethical dimensions into account.
   - Perform amputations only with adequate anaesthesia and pain relief. Amputations are carried out only by surgeons trained and accredited to perform the surgery in their country of practice.
   - Limb length should be maximized, and fitting of prosthesis facilitated.
4. Compartment and crush syndrome
   - Refer or admit the patient in a surgical facility for treatment (fasciotomy and/or debridement), renal protection strategies and observation. Intensive care and haemodialysis may be required (Type 3 or equivalent).

Guidance Notes

- In disaster settings bone grafting and internal fixation have no place in the initial treatment of patients with fractures and are only provided in appropriate facilities (not in tented facilities).

[19] Management of Limb Injuries during disasters and conflicts; https://extranet.who.int/emt/guidelines-and-publications

[20] Herard P, Boillot F. Amputation in emergency situations: indications, techniques and Médecins Sans Frontieres France's experience in Haiti.

5.1.8 Spinal cord injuries

Early recognition of spinal injury with immobilization and appropriate care should be provided at all EMT types.

Initial management of people with spinal cord injury is vital to long-term survival and quality of life. EMTs must avoid secondary injury and prevent complications. Spinal cord injury management must be undertaken with an understanding of the context and nationally available long-term spinal care, especially for people with high c-spine injuries.[21]

MINIMUM TECHNICAL STANDARD

1. Assess each trauma patient for spinal cord injury, handle and transfer patients appropriately to avoid secondary injury (for example using a log roll).
2. Ensure appropriate examination, analgesia and immobilization of the spine.
3. Avoid prolonged periods on hard transfer boards to prevent pressure ulcers.
4. Ensure bladder and bowel care, pressure area care as well as prevention of other complications.
5. Transfer patients with suspected spinal cord injury to a facility with the ability to definitively manage their injury.
6. Inform ministry of health/EMTCC of all patients with suspected spinal cord injury via the established reporting system.

[21] World Health Organization. (2016). Emergency medical teams: minimum technical standards and recommendations for rehabilitation. World Health Organization. https://apps.who.int/iris/handle/10665/252809. License: CC BY-NC-SA 3.0 IGO

5.1.9 Communicable diseases

EMTs are adequately prepared to identify, isolate, treat, safely refer and report communicable disease while providing adequate protection to other patients, staff and the environment.

Communicable diseases can pose a major health threat to populations after a disaster or in other emergencies when population density is high. EMTs must provide clinical management and public health interventions for patients and communities served by them and be aware of endemic communicable diseases that may be prevalent within the context they are working in, diarrhoea and acute respiratory infections being the most common. For specific communicable diseases such as cholera, severe acute respiratory infections (SARI) and viral haemorrhagic fever (VHF), specialized highly infectious disease EMTs can be deployed with the capacity to set up appropriate systems for triage, diagnostics, isolation, case management and referral of patients with the use of proper infection prevention and control (IPC) measures.

MINIMUM TECHNICAL STANDARD

1. Establish case definitions at the triage area, screen for and identify potential communicable disease and create a dedicated patient pathway.
2. Isolate patients with potential communicable disease.

   Type 1 Fixed, Type 2 and 3

   - Provide isolation facilities
   - Ensure availability of handwashing and separated sanitation facilities
   - Establish infectious water waste treatment
   - Separate donning (at entrance) and removal area (at exit) for PPE.

   Type 2 and Type 3

   - Care for cases of communicable disease that need to be hospitalized.
   - Provide separate inpatient capacities with own access to hygiene facilities such as toilets and showers for patients in isolation.
   - Refer for further treatment as needed.

3. Report on a regular basis using the Minimum Data Set (MDS) or the format agreed with the health authorities. Data management will require sufficient resources which should not be underestimated.

5.1.10 Noncommunicable diseases

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Perform rapid diagnostic tests if available.
2. Establish functional linkages with other existing and available public health resources and capacities.

Guidance Notes

- EMTs might do the sampling, given they have access to the right PPE and other equipment and have received adequate training. The sample could then be transferred to a laboratory offsite, using necessary protective measures. Some outbreaks can only be confirmed by laboratory analysis, however, by having clearly defined alert and outbreak thresholds immediate action may be taken for suspected outbreaks.
- Type 1 teams often use isolation areas, using an additional smaller rapid set-up tent, with a basic design: separated donning (at entrance) and removal area (at exit) for PPE, handwashing facilities, infectious water waste treatment and separated sanitation facilities.
- EMTs with inpatient capacities managing complex cases, such as larger facilities, are cohorting confirmed cases.
- Isolation areas in EMTs might need to scale up if an outbreak enlarges, for example, a flood situation with diarrhoeal disease.

EMTs are adequately equipped to identify and manage noncommunicable disease patients admitted to their facilities while also ensuring effective referral as part of continuity of care.

Noncommunicable diseases (NCDs) are recognized as an important threat to a population during emergencies. Major NCDs include cardiovascular diseases, diabetes, cancers, lung diseases, asthma, dialysis-dependent kidney failure, obesity, epilepsy and depression.

MINIMUM TECHNICAL STANDARD

1. Treat patients with life-threatening or severely symptomatic presentations of their NCD,[22] including patients with or at risk of acute exacerbation/complication of their condition, severe physical suffering, or those with life-threatening interruption of treatment. Type 2 and 3 provide basic and advanced intensive inpatient care for acute exacerbations of chronic diseases. If appropriate care is not available, offer palliative and supportive care.[23, 24]
2. Provide basic outpatient NCD care for minor exacerbations.
3. Ensure patients are informed and educated about their condition where practical.
4. Use national treatment guidelines when available.
5. A minimum of two weeks treatment continuity in place to assist patients in managing chronic conditions.
6. Refer patients with NCD to higher level or specialized health facilities and/or connect patients with existing health-care providers capable of managing their conditions.

[22] https://apps.who.int/iris/bitstream/handle/10665/204627/WHO_NMH_NVI_16.2_eng.pdf;sequence=1

[23] Integrating Palliative Care and Symptom Relief into the response to humanitarian emergencies and crises; WHO 2018; https://extranet.who.int/emt/guidelines-and-publications

[24] The Sphere Handbook 2018; https://spherestandards.org/handbook-2018/

5.1.11 Reproductive, maternal and newborn health

EMTs provide adequate and respectful reproductive, maternal and neonatal health care in any deployment.[25]

Maternal health refers in this context to care organized for, and provided to, all women in a manner that maintains their dignity, privacy and confidentiality, ensures freedom from harm and mistreatment, and enables informed choice and continuous support during pregnancy, labour, childbirth and immediate puerperium.

MINIMUM TECHNICAL STANDARD

1. Basic emergency obstetric and neonatal care
   - Provide care for any uncomplicated normal delivery (midwifery level of care). Midwives and doctors experienced in maternal and child health should form an integrated part of each team.
   - Transfer complicated maternal cases (see chapter on referral) to Type 2 or 3 facilities or equivalent for comprehensive emergency obstetric and neonatal care.
   - Dedicate private area for stabilization, emergency delivery (if required), or protection management. This area fulfils minimum criteria for privacy, protection, temperature, light, space and access to equipment and supplies.
   - Document labour and care in general, for example, by using the WHO partograph. EMTs register births as per national protocol and give at a minimum a birth-notification form to the mother.
   - Be able to provide parenteral antibiotics, uterotonics, eclampsia treatment, and carry out basic maternal and neonatal resuscitation.
   - Support joint accommodation of mother and newborn and breastfeeding immediately after birth.

2. Comprehensive emergency obstetric and neonatal care.

   Type 2 and 3
   - Carry out assisted vaginal delivery and caesarean section, manual removal of placenta and management of incomplete abortion (medical or surgical).
   - Manage common obstetric complications: pre-eclampsia, eclampsia, multiple pregnancy, malpresentation, malposition, perineal repair, sepsis, antepartum haemorrhage, postpartum haemorrhage, neonatal resuscitation, and the complications of those who have undergone genital mutilation. Type 3 can manage all major obstetric complications.
   - Provide an antenatal and postnatal inpatient area and outpatient antenatal care area as well as a private dedicated area within the EMT for maternity care, close to the operating theatre and paediatric ward, including a specific maternity delivery bed. These areas fulfil minimum criteria for privacy, protection, temperature, light, space, and access to equipment and supplies.

   Type 3
   - Offer both neonatal and maternal intensive care support and an ICU with the potential to manage maternal and neonatal patients including appropriate climate control, the ability to screen off or darken/quieten an area for severe eclampsia, and the inclusion of a neonatal or paediatric nurse on the team.
   - An obstetric specialist and two midwives are also included in the team.

3. Care for survivors of sexual assault
   - Offer or ensure access to emergency contraception to the fullest extent of the law in the context within which the team is operating.
   - Provide post-exposure prophylaxis for HIV (PEP)[26] and tetanus vaccines.
   - Be aware of protection-related services, specifically surrounding sexual and gender-based violence (SGBV). All staff has received awareness training on SGVB.

[25] Minimum Technical Standards and Recommendations for Reproductive, Maternal, Newborn and Child Health care; https://extranet.who.int/emt/guidelines-and-publications

[26] Post-exposure prophylaxis to prevent HIV infection WHO Fact Sheet, December 2014; https://www.who.int/hiv/topics/prophylaxis/pep_factsheet_dec2014.pdf?ua=1

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Consider extended stay care needs as labour may take place at any time and may take longer than the operating hours of dawn to dusk provision (Type 1 Fixed).
2. EMTs with appropriate competences and capacity are encouraged to include simple perineal repair, manual vacuum aspiration, manual removal of placenta and assisted vaginal delivery as part of the services available at Type 1 level.
3. Ultrasound skills and equipment.
4. Provide a warmed neonatal resuscitation table.
5. Consider contraceptive provision in some form if allowed in-country. If not provided by EMT, direct patients to the nearest appropriate family-planning services available.
6. Provide long-acting reversible contraception (LARC), including intrauterine devices (IUDs), if usually available in the context where deployed, particularly for EMTs working beyond the initial emergency phase.
7. Though it is accepted that a general surgeon trained and experienced in performing caesarean sections is on the team, it is strongly recommended that Type 2 EMTs also include an obstetric specialist and two midwives.

Guidance Notes

- Develop SOPs for conditions with which the team is less familiar and ensure adequate references are available for the clinical team, including support for survivors of SGBV.

5.1.12 Child health

EMTs are able to deliver comprehensive neonatal and paediatric care as a means to reduce child morbidity and mortality by addressing major causes of disease impacting child health in emergencies.

EMTs should be adequately equipped with sufficient resources and technical clinical expertise to deliver basic essential neonatal and paediatric emergency and trauma stabilization care, alongside the ability to respond to common childhood communicable and noncommunicable illnesses. EMTs should be able to respond to the leading causes of death in children such as preterm birth and intrapartum-related (meaning birth asphyxia) complications, pneumonia, diarrhoea and malaria.[27]

MINIMUM TECHNICAL STANDARD

1. Paediatric care
   - Deliver basic emergency and trauma stabilization, essential newborn care, outpatient paediatric care, screening and isolation of communicable diseases and basic management of noncommunicable diseases.
   - Supply tetanus vaccination, however, routine vaccination programmes are not an EMT function.
   - Screen children aged 6–59 months for malnutrition using mid-upper arm circumference (MUAC) and initiate ambulatory treatment in uncomplicated cases.
   - Use an appropriate clinical documentation system, with separate provision for paediatric observations, fluid balance and pain management. Immunization, nutritional status and weight should be specifically considered.
   - Stock adequate equipment, consumables and enough essential newborn and paediatric pharmaceuticals for a minimum period of 14 days.

   Type 2
   - Staffed with at least one with paediatric experience and paediatric nurses, as well as a surgeon and anaesthesiologist with paediatric experience to provide paediatric anaesthesia, surgical, perioperative and medical care.

   Type 3
   - Integrate a neonatal nurse, manage neonatal and paediatric patients with intensive care requirements.

[27] Minimum Technical Standards and Recommendations for Reproductive, Maternal, Newborn and Child Health care; https://extranet.who.int/emt/guidelines-and-publications

2. Child protection
   - Ensure that staff receive suitable training to be able to identify and respond to child protection issues according to internal child protection policy.
   - Appoint a child protection focal point in the team with additional training and experience in child protection.
   - Ensure that throughout the process of clinical care the newborn or child is not separated from their parent or agreed caretaker.
   - Establish a registration system and recognized procedure to account for all unaccompanied minors in the health facility.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Clinical staff have experience in neonatal care, clinical paediatrics, paediatric emergencies, trauma and wound care, nutrition, fluid and electrolyte management, conscious sedation, pain management and specific paediatric drug dosages.
2. Provide adaptive training for child health care.
3. Set up an identified and supervised area for unaccompanied minors.
4. Consider child friendly handwashing stations and latrines.
5. All staff sign the child protection policy.
6. Establish a documentation and reporting system for unexplained injuries in children, including body mapping, stored in a safe, locked place and respect national reporting mechanisms.

Type 3

- Include a paediatric emergency medical doctor, a paediatric surgeon, a paediatric anaesthesiologist and a nurse with neonatal intensive care experience.
- Ensure familiarity with procedures such as oxygen therapy in children, indwelling venous catheters, fluid and electrolyte management in children, intraosseous lines, chest drain procedures, placement of urinary catheters, bladder taps, lumbar punctures, ascetic taps, nebulization therapy and non-invasive ventilation.

5.1.13 Analgesia and anaesthesia

EMTs provide adequate pain management for their patients. This includes general anaesthesia for patients experiencing trauma and awaiting referral to higher levels of care, as well as procedural and perioperative anaesthesia.

Treatment of pain is a basic human right. EMTs should be able to manage acute pain and comply with minimum standards.[28] This includes considering a multimodal approach and availability of a range of treatment options and pharmaceuticals. Specific procedures such as regional anaesthesia also allow safe anaesthesia for patients in settings with scarce resources. The ability to provide safe general anaesthesia is mandatory for Type 2 and 3. The choice of anaesthetic approach depends on the nature and extent of surgical intervention.

MINIMUM TECHNICAL STANDARD

1. An EMT anaesthesiologist licenced to perform anaesthetics and trained and experienced to work in resource-poor environments.
2. Documentation for each patient should include appropriate history, physical examination and consent, expected progress and follow up.
3. Assure patient safety and comfort during the entire surgical process.
4. Pain relief
   - Provide local anaesthesia for procedures and analgesia for pain control.
   - Assess pain upon patient arrival and on a regular basis during the stay, providing treatment with medications of increasing potency when effect is insufficient.
   - Provide patient pain medication as indicated and instruct them on follow-up care.
5. Procedural sedation Type 2 and 3
   - Use a sedative to induce a state that allows the patient to tolerate uncomfortable (short) procedures. This maintains airway reflexes, respiratory drive and cardiovascular functions.
   - Requires careful patient selection, personnel, equipment, peri- and post-procedure monitoring.

[28] Gelb AW, Morriss WW, Johnson W, Merry AF; International Standards for a Safe Practice of Anesthesia Workgroup. World Health Organization-World Federation of Societies of Anaesthesiologists (WHO-WFSA) International Standards for a Safe Practice of Anesthesia. Can J Anaesth. 2018 Jun;65(6):698-708. English. doi: 10.1007/s12630-018-1111-5. Epub 2018 May 7. PMID: 29736769

6. Anaesthesia

Type 2 and 3

- Perform safe paediatric and adult regional, spinal and general anaesthesia.
- Ensure documentation and processes such as preoperative evaluation, anaesthesia plan, consent, pre-procedure ''time-out''.
- Provide a dedicated recovery space close to the operating theatre with a dedicated postoperative nurse to patient ratio of 1 : 2 and monitoring equipment.
- Install resuscitation equipment both in the operating theatre (OT) and in the recovery area.
- Supply medications, equipment and trained staff to provide resuscitation in the event of an anaesthetic complication.
- Provide supplemental oxygen, suction, basic monitoring of vital signs, access to defibrillator in the OT and a carbon dioxide (CO2) detector.
- Stock basic airway adjuncts and self-inflating breathing bags in adult and paediatric sizes.
- Establish perioperative management including pain management and post-anaesthetic care unit with appropriate post-operative staffing and equipment.

Type 3

- Provide ventilator, defibrillator, syringe pump, blood warmer and neural stimulator or ultrasound.
- Ensure advanced monitoring including cardiac monitoring and end-tidal CO2 (ETCO2).
- Establish perioperative management including pain management, post-anaesthetic care unit with ICU level staffing and equipment.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

- ⓘ Minimum anaesthesiologist–OT table ratio of 2 : 1
- ⓘ Minimum anaesthesiologist–surgeon ratio of 1 : 1
- ⓘ Minimum surgeon–OT table ratio of 2 : 1

Guidance Notes

- If the technical expertise, ability to monitor the patient and reverse and manage potential side effects is present in the team, procedural sedation can be accepted in Type 1 Fixed.

5.1.14 Intensive care

Type 3 provide intensive care for those patients whose conditions are life-threatening and who require comprehensive care monitoring and/or mechanical ventilation.

In a large-scale emergency setting, intensive care can be controversial and should be used in the context of social norms and pre-existing capabilities. ICU activities within the EMT should always be equal to the level of a tertiary referral centre and aim to reproduce the level of care available at national tertiary hospitals.

MINIMUM TECHNICAL STANDARD

1. Intensive care considerations
   - Adapt the standard of care to the emergency context.
   - Provide clinical care and continuous monitoring of patients on a 24/7 basis.
   - Consider nutritional requirements of patients (enteral feeding).
2. Staffing
   - 1 : 2 nurse–patient ratio per shift, nurses trained and experienced in intensive care.
   - Multidisciplinary team including qualified intensivists and rehabilitation specialists.
3. Technical requirements
   - Minimum of four ICU beds and at least one incubator.
   - Maintain basic patient function, such as hydration, nutrition, hygiene, early mobilization, facilitate patient communication, prevention of contractures (physio), thromboembolism, pressure ulcers and pulmonary aspiration.
   - Manage hemodynamic instability/shock syndromes of any origin, for example, by safe management of fluids and other specific medications and blood transfusion.
   - Support/replace organ function such as by mechanical ventilation.
4. Ethical considerations
   - Determine triage (referral/admission) process and exclusion criteria. Clearly define an exit strategy for every admission.
   - Adapt treatment standards to emergency settings, balancing caseload, prognosis and resources.
   - Have clear discharge criteria.
   - Ceilings of care decisions, recognizing the need for transfer or considering end of treatment and palliative care, when needed. These decisions demand multidisciplinary decision-making and can be linked to the ethical committee.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

- ⓘ Consider an additional anaesthesiologist outside of those assigned to OT (Type 3)

5.1.15 Surgery and perioperative

EMTs provide safe surgical care within the expected range of services based on their typology. They form part of a referral mechanism for those procedures that are beyond their scope of practice.

Type 2 and 3 offer surgical capacity/capability with the required resources and planning to provide the best possible outcome for the patients. They hold a register of all surgical procedures executed in the EMT, with sufficient details to comply with reporting mechanisms (Minimum Data Set or other format as agreed with health authorities).

MINIMUM TECHNICAL STANDARD

1. Safe surgery
   - Abide to and document use of WHO Safe Surgery checklist,[29] modified for the disaster setting and local context.
   - Use comprehensive clinical records such as the pre-operative assessment in all patient records, including counts of such items as sponges and sharps, anaesthesia record, operation note, post-operative plan rehabilitation plan.
   - Ensure that staff are trained and licenced for every procedure they perform and experienced in the pathologies and circumstances faced in disaster settings that require various treatment protocols.
2. Pre- and post-operative care
   - Ensure informed consent for all surgical procedures. This must be in line with local culture/context and in the patient's own language.
   - Develop SOPs for when patients cannot give consent and have no relatives.
   - Record consent and all surgical procedures in the patient's notes along with a brief description of the ongoing treatment plan to inform other treating teams or the patient's future caregivers.[30,31,32,33]
   - Prepare the surgical site (shower, no shaving but hair can be removed with scissors).
   - Patient remains in recovery area until well awake and signed off by anaesthesiologist.
   - Provide a plan for postoperative recovery and rehabilitation to patient and staff.
   - Ensure a system for recording and evaluating perioperative complications.
3. Capacities and capabilities
   - Ensure availability of dedicated equipment, including OT table with pressure area control/protection, surgical sets, a lighting system powerful enough to visualize deep intra-abdominal organs.

Type 1 mobile and fixed

- Perform minor procedures with adequate sterility and analgesia/local anaesthesia, carried out in an outpatient setting.

Type 2

- Provide general emergency surgical care such as laparotomy, orthopaedic (traction and external fixation, amputation), chest drain insertion and debridement.
- Management of at least seven major or 15 minor surgical procedures per day (paediatric as well as adult surgical cases).
- At least one surgical table and at least five OT Technical staff (nurses or equivalent)
- Any additional OT table includes 20 additional inpatient beds, to ensure adequate post-operative capacity.

Type 3

- Provide specialized trauma and advanced reconstructive surgical care, wound care and fracture management (orthoplastic, maxillofacial reconstruction).
- At least two surgical tables.
- Be able to perform at least 15 major or 30 minor surgical cases per day.
- Ensure air control (10 micron-filter G4).

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Establish an adequate daily planning system to factor for emergency cases.
2. Minimize movements to the OT in order to limit air turbulence and the risk of infection.
3. Access to the OT is organized via a unidirectional flow and restricted to essential personnel only.

[29] World Health Organization. http://www.who.int/patientsafety/information_ centre/documents/en/index.html

[30] Knowlton LM, Gosney JE, Chackungal S, Altschuler E, Black L, Burkle FM, Jr., et al. Consensus statements regarding the multidisciplinary care of limb amputation patients in disasters or humanitarian emergencies: report of the 2011 Humanitarian Action Summit Surgical Working Group on amputations following disasters or conflict. Prehosp Disaster Med. 26. United States 2011. p. 438–48.

[31] Herard P, Boillot F. Amputation in emergency situations: indications, techniques and Medecins Sans Frontieres France's experience in Haiti. Int Orthop. 2012;36(10):1979–81. Epub 2012/05/15. doi: 10.1007/s00264-012-1552-3. PubMed PMID: 22580474.

[32] World Health Organization. Best Practice Guidelines on Emergency Surgical Care Best Practice Guidelines on Emergency Surgical Care in Disaster Situations in Disaster Situations. Geneva: WHO, 2005.

[33] Chackungal S, Nickerson JW, Knowlton LM, Black L, Burkle FM, Casey K, et al. Best practice guidelines on surgical response in disasters and humanitarian emergencies: report of the 2011 Humanitarian Action Summit Working Group on Surgical Issues within the Humanitarian Space. Prehosp Disaster Med. 26. United States 2011. p. 429– 37.

4. Maintain the operating theatre at 21–24 °C to prevent hypothermia of the patient (higher incidence in paediatric cases).
5. Provide consumables for surgical procedures and protective equipment for staff for at least 200 cases.
6. Availability of electrocautery.

Guidance Notes

- Anaesthetic technician's qualifications are not recognized in many countries. Therefore, during a deployment, they need to work under the responsibility of a licenced anaesthesiologist.
- A minor surgical procedure can acceptably be performed with local anaesthesia and superficial procedures, not involving vital structures, such as skin excision. These usually do not require hospitalization.
- A major surgical procedure is defined as a procedure that usually requires general anaesthetics and hospitalization, for example, laparotomy and external fixation.

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5.1.16 Malnutrition

EMTs undertake nutritional screening on children aged 6–59 months[34] as part of their first patient contact and triage assessment and provide initial treatment and referral.

When a patient has been identified with moderate acute malnutrition (MAM) or severe acute malnutrition (SAM) with an identified medical complication, initiation of treatment should commence and, if possible, immediate referral to an identified and agreed local nutritional support service with the technical expertise to manage such cases.

MINIMUM TECHNICAL STANDARD

1. Screening
   - Use the mid-upper arm circumference (MUAC) measurement as an indicator of the nutritional status of children aged 6–59 months in emergency contexts and refer to weight for height for children < 6 months.[35]
2. Outpatient care and follow up
   - Assess children identified as having moderate or severe acute malnutrition with a full clinical examination to confirm whether they have medical complications and if they have an appetite.[36]
3. Treatment, inpatient care and referral
   - Treat and monitor children with medical complications, severe oedema, poor appetite or who presents with one or more Integrated Management of Childhood Illness (IMCI)[37] danger signs as requiring hospitalization.
   - Refer any identified MAM or SAM patient to an agreed local nutritional support service that has the technical expertise to manage such cases. If not available:

Type 1

- Provide initial treatment with limited amounts of therapeutic food.

Type 2 and 3

- Ensure there is required experience and equipment to manage stabilization and clinical management until a more suitable referral option is identified.
- Abide to best practice care guidelines with specific clinical care management requirements such as IV fluids use and rehydration management.[38,39]

[34] https://www.who.int/nutrition/publications/guidelines/updates_management_SAM_infantandchildren_review1.pdf?ua=1

[35] Management of severe acute malnutrition in infants and children, Full set of WHO recommendations; https://www.who.int/elena/titles/full_recommendations/sam_management/en/

[36] https://www.fantaproject.org/sites/default/files/resources/Appetite-Test-NACS-Module%204-Mar2017.pdf

[37] https://apps.who.int/iris/bitstream/handle/10665/104772/9789241506823_Module-1_eng.pdf?sequence=3&isAllowed=y

[38] https://www.who.int/elena/titles/full_recommendations/sam_management/en/index5.html

[39] https://www.who.int/elena/titles/dehydration_sam/en/

- Transfer children initially admitted for SAM to outpatient care when their medical complications, including oedema, are resolving, they have good appetite and are clinically well and alert.
- Determine decision to transfer children from inpatient to outpatient care by their clinical condition and not on the basis of specific anthropometric outcomes as a specific mid-upper arm circumference or weight-for-height/length.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Consider appropriate nutrition and clinical management of malnutrition training to adapt and apply technical skills to the austere conditions of an emergency and the context.
2. Periodically monitor children with SAM after discharge to avoid a relapse.

Guidance Notes

- Be aware of, and able to respond to child protection issues. Good child safeguarding mechanisms should be in place to support best practices.[40]
- Be aware of the increased risks regarding the combination of malnutrition with communicable diseases such as measles, HIV and/or TB. Often, adults presenting with extreme malnutrition have combined underlying illness, such as AIDS or TB.
- Detect the presence of bilateral pitting oedema as an indicator for SAM (mild oedema: oedema in both feet/ankles; moderate: feet plus lower legs, hands or lower arms; severe: generalized oedema including both feet, legs, hands, arms and face.[41]

[40] https://www.unicef.org/protection

[41] https://www.who.int/elena/titles/full_recommendations/sam_management/en/

5.1.17 Palliative care

EMTs provide palliative and end-of-life care that relieves pain and suffering, maximizes the comfort, dignity and quality of life of patients and provides support to family members.

EMTs should focus not only on treatment of acute injuries, illnesses and symptom relief, but also on providing continuity of care for people with chronic conditions and assuring the comfort and dignity of patients not expected to survive. Palliative care is the prevention and relief of suffering and distress associated with end-of-life care. It includes identifying, assessing and treating pain as well as other physical, psychosocial and spiritual needs. It integrates physiological, psychological and spiritual care based solely on patient or family request and includes support systems to help patients, families and caregivers. This end-of-life care should be provided regardless of the cause.[42]

MINIMUM TECHNICAL STANDARD

1. Palliative care considerations
   - Recognize and respect local ways of making medical decisions and local values related to illness, suffering, dying and death.
   - Include palliation for conditions related to the disaster as well as chronic conditions, which might have worsened.
   - Develop guidelines and internal procedures to support consistent palliative care.
   - Provide unbiased information and respect patient and relative requests and expectations. A care plan should be agreed upon and be based on patient preferences. The patient has access to mental health and psychosocial support.
   - Train staff to provide palliative care, including pain and symptom control, mental health and psychosocial support.
2. Initial palliative care with referral
   - Pain management, including opioids in accordance to local regulations, counselling for patient and family respecting cultural aspects and continued outpatient treatment.

   Type 2 and 3
   - Provide symptom control such as peritoneal centesis and palliative surgical care and end-of-life care support.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Establish contact and work with organizations and existing/local networks of community care that deliver home-based care or community-based management.
2. Establish an area to give patient whatever comfort possible during end of life.
3. Ensure support for safe and dignified burial practices in collaboration with the local community, according to national or international guidance.

[42] Integrating Palliative Care and Symptom Relief into the response to humanitarian emergencies and crises; WHO 2018; https://extranet.who.int/emt/guidelines-and-publications

5.1.18 Rehabilitation

EMTs provide rehabilitation according to their typology to improve outcomes for patients and reduce length of stay. This includes the provision of appropriate assistive devices such as crutches and wheelchairs.

Rehabilitation is an essential part of health-care provision, contributing to better functional outcomes, reduced length of stay and improved quality of life. It is one of the core functions of trauma care systems and has an increasingly recognised role in some outbreak responses. As such, EMTs should have specific plans for the provision of rehabilitation services to their patients. As national rehabilitation services are often severely impacted by emergencies and rehabilitation needs persist beyond the minimum stay of many EMTs, it may be necessary for some EMT providers to increase and extend their rehabilitation capacity to bridge a gap while longer term services are established.

MINIMUM TECHNICAL STANDARD

1. Ensure the onward referral of patients requiring ongoing rehabilitation
2. Establish physical accessibility to people with injuries and disabilities

Type 1

- Provide basic rehabilitation care or identify patients requiring rehabilitation and refer them to an appropriate EMT or existing local facility.[43]

Type 2 and 3

- Provide outpatient and inpatient (acute) rehabilitation services.
- Have at least one rehabilitation professional per 20 beds.
- Allocate a rehabilitation space of at least 12 m^2 if staying for more than 3 weeks
- Deploy with essential rehabilitation equipment.

[43] Emergency Medical Teams: Minimum technical standards and recommendations for rehabilitation. Geneva: WHO, 2016; https://apps.who.int/iris/handle/10665/252809

Guidance Notes

- Refer to "Emergency Medical Teams: Minimum technical standards and recommendations for rehabilitation."
- Rehabilitation professionals should be experienced in trauma and acute medical rehabilitation with experience and/or training to work in austere environments.
- Essential rehabilitation skills include basic splinting; assistive device prescription, fitting and training; positioning and early mobilization, education and re-training of patients and care providers in daily activities, as well as basic respiratory interventions.
- As part of providing accessible and ethical care, teams must provide meaningful access to services for people with disability and injuries.
- Ensure physical access inside the facility including accessible washrooms and latrines (with at least one where a caregiver can also access) and flat or ramped patient walkways.
- Plan for discharge and referral from the early stages of care in order to identify service gaps. Promptly communicate any gaps to the coordinating authorities.
- Maximize opportunities to exchange rehabilitation knowledge and competencies with local personnel of various disciplines.

Step-down facilities and rehabilitation

- A step down unit provides interim inpatient care for medically stable patients while preparing them for discharge into the community.
- Consider converting field hospitals into step-down facilities after an emergency, when demand for acute surgical and medical services directly related to the event decreases over time.
- Include medical and nursing support as well as an increased allocation of space and workforce for rehabilitation.
- Place emphasis on preparing patients with long-term impairments, their care providers, and local rehabilitation personnel to safely manage ongoing needs beyond the departure of the EMT.
- Links with local rehabilitation and social care providers, where present, are vital.

5.1.19 Mental health and psychosocial well-being

EMTs assess the mental health and psychosocial support needs of their patients and staff/volunteers and provide first aid and referral as needed.

Mental health and psychosocial problems in emergencies are interconnected across individual, family and community levels and experienced differently among adults, adolescents and children, requiring different levels of support. Mental health and psychosocial support services provided by EMTs should complement existing services and link to referral pathways, while also considering existing resources, technical expertise and capacity within the team to deliver such services.

MINIMUM TECHNICAL STANDARD

1. Carry out follow up, clinical supervision and monitoring as part of good practice, ensuring that the approaches delivered, including psychosocial first aid (PFA) and mental health, neurological, and substance use (MNS) disorders, are implemented correctly.
2. Ensure clinical mental health care is available for conditions such as depression, psychotic disorders, epilepsy and alcohol and substance abuse, and that psychosocial activities, such as PFA are integrated across the health facility as a continuum of care service to patients, family members and caretakers by specialists and trained, supervised staff.
3. PFA
   - Provide PFA as first line support and onward referral as a human and supportive response to manage acute stress reactions for people exposed to recent traumatic events.
   - Train clinical and non-clinical staff as well as volunteers to assess and apply the principles of PFA.
   - Ensure information about mental health and psychosocial support activities provided to the community is accessible, clear and disseminated to different target audiences at the early onset of an emergency.
4. Well-being of staff and volunteers
   - Establish institutional policies that uphold the mental health/well-being of staff and volunteers.
   - Apply processes and procedures across the deployment cycle supporting holistic preventive approaches to minimize risk and promote resilience.
   - Ensure availability and access to support services for staff and volunteers at all times.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. EMTs should refer to international guidelines such as the *Mental Health Gap Action Programme (mhGAP),*[44] *IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings*[45] for best practice guidance in the provision of basic and advanced services.
2. Establish collaborative coordination and referral pathways to ensure availability of complementary support services to meet the varying needs of different groups.
3. Encourage activities that promote community engagement and community self-help approaches to assist in strengthening existing capacities, and ensure appropriate social and cultural considerations and practices are applied.
4. Secure an adequate stock supply of essential psychotropic medicines together with at least one from each therapeutic category in line with the national essential drugs list (antipsychotic, antidepressant, anxiolytic, antiepileptic, antiparkinsonian), and medicines to counter side effects of antipsychotics.[46]

[44] Mental Health Gap Action Pogramme https://apps.who.int/iris/handle/10665/43809

[45] IASC MPSS Interagency Standing Committee Guidelines in Mental Health and Psychosocial Support; https://www.who.int/mental_health/emergencies/IASC_guidelines.pdf

[46] https://apps.who.int/iris/bitstream/handle/10665/44095/9789241547697_eng.pdf;sequence=1

5.1.20 Transfusion services

Type 2 and 3 must be able to provide safe blood transfusion when clinically indicated.

Type 2 and 3 provide access to emergency surgical and obstetric services and therefore must have the capability to safely transfuse blood. Blood transfusion is a potentially life-saving intervention in certain clinical situations. Populations always require access to safe transfusion services as part of a minimum package of care including during emergencies, but this should only be delivered by organizations and health facilities that can maintain the minimum standards of safe transfusion.

MINIMUM TECHNICAL STANDARD

1. Establish clear transfusion policies and step by step procedures for donation, storage, testing, management of complications and appropriate documentation.
2. Blood donation takes place in an appropriate clinical area and with aseptic technique. Blood is correctly labelled and immediately prepared for storage (citrated and refrigerated).
3. Accept voluntary fresh whole blood donation from the local public or relatives of patients in a clinically safe manner: careful donor selection, appropriately counsel, take a history and test the potential donor for clinical contraindications, such as low haemoglobin and infectious diseases.
4. Store blood in a dedicated blood fridge that meets international standards, including visible temperature display and recording, alarm for power supply cut, back up options for power and/or battery and security lock. Strict procedures to monitor expiry dates, usage and storage conditions. Ensure blood is transported in appropriate and dedicated cool boxes.
5. Test donors for:
   a. ABO Rhesus D grouping
   b. Haemoglobin
   c. Infectious disease screening including:
   i. HIV (1 & 2)
   ii. Hepatitis B and C
   iii. Syphilis
   iv. Malaria and other diseases as indicated.
6. Test receiving patients for ABO Rhesus D grouping.
7. Execute cross-matching (for transfusion in babies until four months of age blood needs to be compatible with child and mother's blood group and Rhesus phenotype).[47]
8. Train staff regularly to adequately indicate and perform tasks around blood transfusion and on recognizing symptoms of adverse reactions.
9. Access to equipment, medications and skills required to manage mild, moderate and severe reactions or other complications in the recipient.

Guidance Notes

- When national health authorities have strong transfusion services still operating during an emergency, national EMTs (and with permission, international EMTs) can use transfusion supplies as the source of the blood and blood products for their patients.
- Report any adverse or near miss event to the EMTCC with an analysis of the event for transparency and shared learning. Transparency towards the patient and/or family member concerned is also of major importance.

[47] Blood Transfusion; https://bibop.ocg.msf.org/docs/2/L002TRFM01E-P_Blood%20transfusion_MSF_EN_2019.pdf

5.1.21 Laboratory services

Laboratory services are essential to support disease surveillance, diagnosis and efficient patient management.

Laboratory capability should be appropriate to EMT type and to the context in which the team deploys. EMTs should consider endemic infectious diseases and regional outbreaks when considering tests to carry.

MINIMUM TECHNICAL STANDARD

1. Establish clear guidance and step by step procedures on how tests are requested, patients and samples identified, samples collected, and results delivered to the requesting physician.
2. Provide the right medium/packaging for any sample that is sent for further investigation, for example, meningitis and tuberculosis (TB).
3. Document results in the patient's notes, (acknowledged by the responsible physician) and relevant pathological tests conveyed to the patient.
4. Train staff on laboratory testing when there is no laboratory technician in the team.
5. Understand the false positive/false negative rates for the tests in use, in particular the limitations of some point-of-care tests.

Testing capacity

6. Endemic disease rapid diagnostic testing (RDT) appropriate to the context of the deployment, if available.
7. Basic diagnostic tools (urine pregnancy test, urine dipstick, blood glucose, haemoglobin testing).

Type 2

AB0, Rhesus D grouping, HIV 1 and 2, hepatitis B and C and syphilis.

Type 3

Accept samples from smaller teams for processing:

- blood gas
- basic electrolytes
- renal function (urea and creatinine)
- full blood count
- basic culture and sensitivity
- basic gram staining and microscopy

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Consider transport and storage of temperature sensitive tests and reagents.
2. Establish sufficient climate control and appropriate ventilation in laboratory areas.
3. Maintain IPC precautions and appropriate waste management of samples and any associated chemicals/reagents.

5.1.22 Medical imaging and reporting

Type 2 and 3 have basic X-ray and ultrasound capabilities and form part of a referral mechanism for facilities lacking such services.

Diagnostic imaging provided by EMTs should comply with minimum safety standards for both technician and patients.[48] In particular, EMTs must comply with the standards of justified practice regarding the procedure's benefit outweighing the risk, minimizing doses to staff and patients and maximizing safety through shielding and well-maintained equipment. When demand is high EMTs should have a system that considers the appropriate fulfilment of imaging and triaging requests.

MINIMUM TECHNICAL STANDARD

1. Provide plain radiography capable of imaging limbs, chest, pelvis and spine in a dedicated X-ray space identified on camp layout maps.
2. Locate the space peripherally on the hospital site but with access to acute patient areas and considered in patient flow.
3. Establish safety requirements such as a cordoned off safety area surrounding the X-ray tent with adequate signage and distance from the source of exposure and wear lead gowns.
4. Ensure the X-ray technician is a qualified and trained practitioner (usually a radiographer, some teams may have a clinician with the appropriate licence).
5. Comprehend preventive maintenance procedures, trouble-shooting techniques, and how to use the equipment in an austere environment.
6. Consider provision of radiography services for emergency out of hours requests. Identify each study taken at minimum with the date of the study, patient identification, identification of the facility and initials of the technician who performed it.
7. Ensure a formal patient identification check, explanation of the procedure and verbal patient consent for each examination.
8. Consider the risk of pregnancy (for X-ray) and include it in any imaging protocol.
9. Provide all patients, at a minimum, a paper printout of their images and a written clinical interpretation in their discharge paperwork.

Type 3

- Ensure there is a clinician on the team competent in eFAST scanning.

[48] International Atomic Energy Agency, World Health Organization, Pan American Health Organization, International Labour Organization, International Society of Radiographers & Radiological Technologists, International Organization for Medical Physics, et al. Specific Safety Guide, No. SSG-46 ; Radiation Protection and Safety in Medical Uses of Ionizing Radiation; 2018; https://www-pub.iaea.org/MTCD/Publications/PDF/PUB1775_web.pdf

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. EMTs are encouraged to extend their ultrasound capability above minimum standard by having clinicians experienced in an undifferentiated shock protocol, obstetrics and gynaecology, difficult IV placement, regional blocks, foreign body identification and fracture alignment. Portable ultrasound equipment for medical care is efficient, professional, reliable and helps make better decisions.
2. Although Type 1 teams are not required to provide any radiological investigations, if they have a clinical capability to use ultrasound, it can improve decision-making in acute trauma (and other presentations) and triaging of patients for transfer to higher levels of care.
3. EMTs may be in a position to donate their imaging equipment once a careful needs analysis has been undertaken and in accordance with the WHO Medical Device Donation Guidelines.[49] When donations are considered, careful attention is required due to complex matters such as specialized training, professional installation, compliance with safety regulations and need for specialized maintenance support in the field. Training and spare parts should be provided either remotely or on-site after donation.
4. Establish a remote support system to discuss difficult cases with a qualified radiologist by videoconference or for technical issues with equipment failure or maintenance when not available on-site.

Guidance Notes

- Most reporting and interpretation of imaging in the acute emergency is performed by non-radiologist clinicians. Large teams may include a radiologist for this function.
- EMTs using digital film have to consider how to print or download a copy of the patients X-ray or ultrasound image onto a digital carrier for further patient follow up.

[49] GUIDELINES FOR HEALTH CARE EQUIPMENT DONATIONS; https://www.who.int/medical_devices/publications/en/Donation_Guidelines.pdf

5.1.23 Clinical pharmacy

EMTs provide appropriate and quality pharmaceuticals to the patients they serve.

EMTs have a system in place to safely bring, store, prescribe and dispense medications for the patients they serve.

MINIMUM TECHNICAL STANDARD

1. Establish a team formulary, based on the WHO model list of essential medicines[50] or equivalent.
2. A documented process for dispensing with clear procedures in line with WHO best practice guidelines.[51] Medicines dispensed to patients should contain information in an appropriate language for the patient (or in pictorialized form) and include an expiry date.
3. Train and assess staff, in particular, those who do not usually dispense medicines prior to practicing within the EMT. Ensure language barriers are suitably covered by using trained translators or local health-care workers.
4. Establish a standardized and documented process on medication administration that is characterized by safe and timely practices including date and signature of the provider noted in the patient record.
5. Establish a documented process for prescribing medicines including a standardized form for use in outpatient and inpatient areas (as appropriate for the type of EMT).
6. Provide a system to encourage team members to report near-miss or adverse incidents. Medication errors or near-miss incidents involving pharmaceuticals have significant implications on patient safety.
7. No use of medicines for clinical trials should occur without the prior approval and involvement of the ministry of health.
8. Avoid off-label use of medicines due to lack of licenced medicines where possible. Obtain patient informed consent.

[50] WHO model list of essential medicines List, 21st list ,2019; https://www.who.int/publications/i/item/WHOMVPEMPIAU2019.06

[51] Guidelines on Good Pharmacy Practice; https://www.who.int/medicines/services/expertcommittees/pharmprep/CLEAN-Rev1- GPP-StandardsQ-PharmacyServices-QAS10-352_July2010.pdf

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Include a registered pharmacist in the team composition for Type 3, while a trained pharmacy focal point is considered adequate for Type 2.
2. Ensure processes to access information on medicines if required; this may be through access to specialty resources.[52]

Guidance Notes

- Prescribing form must be legible and include (at a minimum):
  - generic drug name and strength
  - formulation
  - administration route
  - administration time or frequency
  - prescriber name printed and signature
  - date of prescription


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[52] WHO model list of essential medicines List, 21st list ,2019; https://www.who.int/publications/i/item/WHOMVPEMPIAU2019.06
MSF essential medicines list; https://medicalguidelines.msf.org/viewport/EssDr/english/essential-drugs-16682376.html

5.1.24 Sterilization

EMTs have systems in place to ensure sterility of equipment, consumables and devices as appropriate.

The processes of sterilization and decontamination are complex, requiring specific infrastructure, equipment and process. Sterilization and decontamination of instruments and medical devices play a very important role in the prevention of health-care associated infections.[53] Any EMT that plans to reuse instruments and medical devices must have the ability to decontaminate them safely, applying steps indicated in the standard life-cycle of decontamination.

MINIMUM TECHNICAL STANDARD

1. Establish safe procedures for staff working in the sterilization area in terms of appropriate PPE, usage of the autoclave and handling surgical trays/sharps.
2. Training and routine practices should be part of staff education to prevent exposure to blood and body fluids.
3. Establish a system for traceability and quality control, documentation and record keeping of all steps of the decontamination cycle including contingency for system and equipment failure.
4. Sterilization area should be divided in areas (to wash, check and maintain, prepare, pack and sterilize instruments and equipment) with a clear unidirectional workflow from dirty to clean.
5. Establish a grey water management system with treatment before disposal.

Type 1

- Basic steam autoclave or disposable material

Type 2 and 3

- Complete surgical autoclave with traceability
- Mechanical control of temperature and humidity in the sterilization area
- Redundancy of power supply

[53] WHO Decontamination and Reprocessing of Medical Devices for Health-care Facilities, 2016
https://apps.who.int/iris/bitstream/handle/10665/250232/9789241549851-eng.pdf?sequence=1

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Establish mechanic control of temperature and humidity in the sterilization area and avoid turbulent airflow.
2. Consider the principle of central sterilization with a specified area near the OT if available.
3. Sterilization algorithm showing the steps should be visible and displayed in the sterilization area.

Guidance Notes

- Consider the option of single-use sterile instruments, although careful consideration should be given in terms of logistics requirements, staffing, training and costs.
- Disassemble devices, so that all surfaces can be cleaned and disinfected, irrespective of the cleaning method chosen. Facilities with minimal resources can adequately clean and prepare devices for sterilization with effective manual cleaning processes.

5.1.25 Infection prevention and control

EMTs must make appropriate arrangements for adequate infection prevention and control (IPC) at the facility which has mechanisms in place to prevent transmission of infectious agents from person to person and provide safe, high-quality health services.

IPC is a practical, evidence-based approach preventing patients and health workers from being harmed by avoidable infections. IPC activities help to minimize the incidence and burden of health-care acquired infections and associated risks for patients, caregivers, visitors and staff. IPC activities within an EMT require consistent practice of standard precautions, transmission-based precautions and structural measures.[54]

MINIMUM TECHNICAL STANDARD

1. Provide education and training to all staff on IPC standard-based precautions (the responsibility of every team member).
2. Provide education and training to all external staff that support IPC activities on internal protocols.
3. Appoint a responsible IPC focal point within the team who oversee adherence to protocols.
4. Establish a plan for reporting and investigating cross infection and measures to prevent repetition.
5. Ensure all set of standard precautions[55] are followed at all times.
6. Provide PPP for staff working in key clinical areas such as the OT, sterilization, kitchen and waste management areas.
7. Develop clear procedures for transmission-based precautions (measures to prevent cross-infection within the care environment) by route of transmission.
8. Plan layouts that minimize risk of cross contamination and patient flow to minimize exposure of high-risk patients and facilitate patient transport.

Type 2

- Ensure a minimum of 1 m between beds.

Type 3

- Establish wider bed space for ICU/critical care area (2.5 m) to maintain circulation space and facilitate equipment use.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Choose staff clothing with respect to adequate cleaning possibilities and laundry services that can reach adequate temperatures.
2. Use materials and fabrics that are easy to clean.

[54] https://www.who.int/infection-prevention/tools/core-components/facility-manual.pdf

[55] https://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf

5.1.26 Health promotion and community engagement

EMTs must be equipped with the appropriate health messages and materials as well as the skills to adapt to local context in order to contribute to a wider response to any emergency.

EMTs play an important role in encouraging health-seeking behaviours in emergencies given their frequent and direct engagement with affected populations. When affected communities have low knowledge about health risks, trust plays an important part in public perceptions about severity of that risk. Health-care professionals are often allotted a higher level of trust than other stakeholders in public health emergencies; EMTs should therefore be able to effectively educate such affected populations on topics that help prevent sickness or the spread of diseases.

MINIMUM TECHNICAL STANDARD

1. Develop a communications plan that considers core principles of community engagement[56] and the context of operations.
2. Train all staff on key elements of the communications plan and the soft skills needed for health promotion and community engagement in emergencies.
3. Integrate IEC materials into daily operations to successfully reach both individuals and the community.
4. Make available a comprehensive catalogue of IEC materials on various topics on (but not limited to) infection prevention and control measures; water, sanitation, and hygiene; food safety; vector-borne diseases; sexual health and NCDs.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Teams must consider the appropriate use of media and social media tools when communicating with target populations on public health issues.
2. Being consistent with messages, adhering to media SOPs and using local languages/dialects whenever possible should be considered when crafting these messages.

[56] Principles of Community Engagement 2nd Edition; https://www.atsdr.cdc.gov/communityengagement/pdf/PCE_Report_Chapter_2_SHEF.pdf

5.1.27 Chemical, biological, radiological and nuclear (CBRN), toxicology and toxinology

EMTs should have the capability to recognize victims of exposure to chemicals, poisonings and toxins and to protect themselves with basic PPE when there is any suspicion of potential contamination of staff.

EMTs deployed to general emergency situations may occasionally see patients presenting with accidental or deliberate exposure to chemicals, poisons, toxins and envenoming. Radio-nuclear exposure could be possible, but this will usually be the result of a complication of an emergency or disaster. In those cases, only those EMTs with specialist skills, PPE and training should be granted access to the hot zone.

MINIMUM TECHNICAL STANDARD

1. Recognize symptoms and signs of chemical, toxicological and toxin exposures.
2. Assess, recognize and refer patients to appropriate centre.
3. Understand what kind of PPE is required (basic vs specialist) to protect staff.
4. Initiate first aid measures if safe to do so.
5. Link to national poisons advice line, and if none exist, to an agreed international expert through the ministry of health/EMTCC.
6. Decontaminate as possible, given the field setting, without risk to staff or bystanders.
7. Ensure protection is provided to those tasked with transporting to the appropriate level of care.

Type 2

- Provide antidotes if available.

Type 3

- Institute ICU care if safe and appropriate.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. EMTs should have access to national protocols and understand appropriate referral pathways for patient referral.
2. Provide team members access to specialist texts and resources.

Guidance Notes

- Clinical and triage areas contaminated by assessment and treatment of the affected patient should be properly sanitized before reopening.

6 Operational support technical standards

6.1 Introduction

Operational support concerns two main areas – Logistics and WASH. Both require the coordination of multidisciplinary teams, to ensure effective, coherent and comprehensive preparation and support for the efficient delivery of health-care services.

6.2 Operations support (logistics) technical standards

Logistics technical standards govern the operational functionality and self-sufficiency of EMTs.

Logistics technical standards (summary)
Power and fuel: ensure sufficient, safe, sustainable and context appropriate fuel, power supply and lighting for their facilities, clinical care and support services.
Communications: have the ability to transmit by voice and data to local and national coordination structures with at least one level of redundancy in case of failure.
Transportation and fleet: effectively coordinate the transport of equipment and personnel to the site and throughout the operation.
Food: provide food requirements for all staff, inpatients and caregivers.
Warehouse management: have a warehouse management system with processes and procedures that address preparedness requirements and an ability to respond in the field to manage consistent availability of supplies.
Pharmacy supply chain and medical stock management: be self-sufficient with enough pharmaceutical, medical consumables and medical equipment to deliver the patient care per type of team.
Donation management: have policies in place compliant with national and international standards, for anticipated donation of medical consumables, pharmaceuticals, equipment and/or their entire field facility.
Safety and security: demonstrate due diligence for the safety and security of their personnel and patients during deployment by putting in place management plans and practical measures that are appropriate to the operational context and communicating these to those concerned.
Facility environment and structures: provide suitable and acceptable facilities for clinical care and staff needs.
Mobilization: mobilize in the shortest possible time with a plan stated in established SOPs.
Site Assessment and Planning: assess possible site locations and adapt their layout and configuration to local conditions, including the possibility of working within/reinforcing existing health facilities.
Sequential build: prioritize the establishment of the facility in such a way that areas and services necessary for urgent patient care are established first, while the rest of the facility is completed, allowing certain functions to be operational before deployment is fully completed.
Demobilization: have plans and procedures for coordinated demobilization that maximizes the time of operation and minimizes disruption, supporting recovery of normal local health services and local environmental impacts.

6.2.1 Power and fuel

EMTs must ensure sufficient, safe, sustainable and context appropriate fuel, power supply and lighting for their facilities, clinical care and support services.

EMTs require reliable power and lighting. While solar power and other forms of renewable energy should be actively explored by EMTs, most will find they require some form of fuel supply to enhance their power generation capacity. In dealing with critical supplies in a resource constrained environment, EMTs must be aware of best practice in procurement of adequate quality fuel for their needs without negatively impacting supplies of other essential services and the local population.

MINIMUM TECHNICAL STANDARD

1. Calculate minimum and maximum power requirements.
2. Capability to produce power in a consistent manner to match needs, with redundancy in case of failure or damage.
3. Plan for surge requirement for items such as X-ray, sterilizers, air conditioners and the maximum load expected on the system.
4. Power supply components should be safe, clearly marked with adequate interior and exterior electrical equipment, with sizes relevant to needs and adaptable to the context.
5. Distribute power across the site of operation using weatherproof equipment (IP rating 45, 54 or 65) and all required safety measures, such as earth leakage, earth stakes or residual current device (RCD).
6. Ensure critical uninterruptible power supply (UPS) battery back-up, breakdown procedures and enough spare electricity in the system to cope with possible failures for life saving equipment such as mechanical ventilators.
7. Calculate and communicate daily fuel consumption calculations prior to deployment.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. All circuits, electrical cabling and boards must be rated for field use and be subjected to and certified for use by a qualified electrician.[57]
2. Power generation from renewable sources such as solar is encouraged but is highly unlikely to serve the needs of a 24-hour response by a large EMT.

[57] MSF Guideline Electrical Security 1st edition. https://bibop.ocg.msf.org/docs/48/L048ENEM09E-P_GuidelineSecuElectri_EN.pdf

3. Power generators must be rated for use in field conditions and ideally buffered for noise.
4. Explore all means possible to transport enough fuel and batteries to be operational as fast as possible.
5. Capacity for checking fuel availability and quality and/or clean fuel using filters to ensure no damage occurs to equipment due to contaminated fuel.
6. Consider safe management

Guidance Notes

- Liquid Natural Gas (LNG), propane and other flammable compressed gases may be required but can be in short supply locally or use different fittings. EMTs should consider other contingencies if LNG or similar fuels are unavailable.

6.2.2 Communications

EMTs must have the ability to transmit by voice and data to the local and national coordination structures with at least one level of redundancy in case of failure.

EMTs must be able to communicate with other health facilities and health coordination systems to fulfil their functions. This standard relates to physical equipment and systems in place to ensure transfer of voice messages, such as clinical referrals or emergency calls, and data daily reports, such as the minimum data set, including a primary and at least one backup communication system.

MINIMUM TECHNICAL STANDARD

1. One primary and at least one back up communication system that include voice and data.
2. Training to all members in specialized communications equipment.
3. A battery management system in place during storage as well as during field deployment.
4. A dedicated space within the team administration area should be assigned to communications.
5. Technology used should be robust and appropriate for tasks such as meeting the requirements of the reporting mechanism and safety and security.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Availability of a secondary system where mobile coverage may be temporarily impacted.
2. EMTs must be aware of national laws regarding digital radio network protection.
3. Increase data bandwidth to allow telehealth capacity or video calls with experts to discuss complex cases and referrals.
4. Establish a call log system that allows traceability of important calls, such as the transfer of patients, orders for supplies or security incidents.

6.2.3 Transportation and fleet

EMTs must effectively coordinate the transport of equipment and personnel to the site and throughout the operation.

Transportation is a key factor for both national and international EMTs and must be planned and tested. Access to transport means, replenishment of consumables and equipment, and the transfer of patients are the important fleet and transport functions.[58]

MINIMUM TECHNICAL STANDARD

1. EMTs should have electronic and hardcopy manifests that reflect the weight, volume and any dangerous goods carried.
2. Secure equipment during transportation in compliance with local regulations relevant to vehicle/aircraft type; mark and identify each box and goods even if only one side is visible.
3. Establish a management and maintenance plan for the fleet (or machinery park), as well as a registration mechanism on paper or digitally to allow traceability.
4. Dangerous goods must be packaged according to International Air Transport Association (IATA) regulation and packed and stored to allow easier access for inspection.
5. The transport plan includes assessment of the operating environment considering road conditions, security, journey times, seasonal weather changes and hazards.
6. Ensure that all vehicles are registered with the appropriate local authority and where mandated by law have evidence of annual safety inspection and have valid third-party liability insurance.
7. EMTs working in maritime settings should ensure that boat riders have access to maritime safety equipment including flotation aids and an emergency beacon.
8. EMTs should have medical transport equipment that can be taken on board non-specialist vehicles acting as temporary ambulances, considering occupants safety, patient care, ergonomics, medical equipment selection and placement.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Coordinate arrival and departure plans with local and national authorities, including entry and departure points.
2. EMTs should check that local unloading facilities are undamaged and available (for example forklifts). Larger teams may be able to bring their own unloading equipment and offer it to other response teams. Ground handling equipment, including but not limited to a pallet mover, off-road capable forklift or multipurpose mini tractor, side by side quad, preferably with patient litter.
3. Specialist advice on customs clearance should be sought for transportation of specific equipment and supplies due to possible in-country restrictions.
4. Prearranged agreement on chosen logistics platform including regular testing to speed up deployment processes.
5. EMTs bringing ambulances from other countries should be aware of the special licensing regulations and importation of the vehicle must be pre-agreed by national authorities.

Guidance Notes

- Packaging and boxes should be resistant to the operational and environmental conditions. Packaging should ideally be multi-use, able to be later used for operational functions and not constitute an environmental disposal hazard.
- Insignias and markings on vehicles can be helpful, depending on local advice and security situation. Motor vehicle accidents remain one of the major cause of staff injury and death in emergency response. EMTs must instil a safe culture for driving, controlling speed to local conditions and use of safety measures such as seat belts.

[58] Universal Logistics Standards in Humanitarian Response; https://handbook.ul-standards.org/en/humlog/#sec040

6.2.4 Food

EMTs must provide food requirements for all staff, inpatients and caregivers.

All EMTs should assume food access and availability will be compromised in the early response phase. EMTs are required to support their staff and inpatients (plus caregivers) for a minimum period based on their status and area of deployment. Food should be appropriate and adapted to the context, clinical requirements and cultural acceptance.

MINIMUM TECHNICAL STANDARD

1. N-EMTs must carry a minimum of three days food supply to cover daily energy requirements (minimum of 2100 Kcal person/day) and consider special dietary needs of those deployed.
2. I-EMTs must carry a minimum of 14 days food supply.
3. All EMTs need at least one day of emergency food carried by personnel.
4. EMTs providing inpatient care must ensure patients and their nominated caretaker are provided with cooked food that is culturally appropriate. The food provided must fulfil the varying dietary needs of patients including daily energy and micronutrients requirements.[59]
5. Staff responsible for food preparation must receive adequate training on key aspects relating to food management and food safety.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Plan for and identify a range of appropriate and alternative food solutions for staff and patients ranging from continued use of Meals Ready to Eat (MREs) or transitioning to local procurement if this does not adversely affect the local population in terms of food availability and market prices of staple food.
2. Plan for a field kitchen to provide food for admitted patients (Type 2 and 3).

[59] SPHERE – Design of food rations and nutritional quality (Food Assistance standard 6.1) (https://handbook.spherestandards.org/en/sphere/#ch001)

6.2.5 Warehouse management

EMT should have a warehouse management system with processes and procedures that facilitate reaching the ideal level of readiness and ability to manage supplies during the response phase.

Warehouse management is a complex task with many parts required to operate simultaneously. Standards on warehouse management apply to EMTs in both their pre-deployment base and temporary facilities.[60] Establishment of a warehouse management system needs to factor in receiving and managing stock that is labelled and organized within appropriate storage parameters, the right technical team, information management systems and security risk management procedures. EMTs may choose to outsource their warehousing management system although access to stock must always be guaranteed.

MINIMUM TECHNICAL STANDARD

1. All EMTs require dedicated warehouse space and facilities to store, maintain and pack supplies and equipment. Warehouse storage may be a dedicated facility or section of an existing warehouse.
2. Implement good warehouse practices, such as physical facilities, temperature control, handling of goods, sanitation, safe loading, and housekeeping and pest control according to national regulations.
3. Define a clear and logical layout focusing on maximizing space utilization and minimizing handling efforts based on the characteristics of goods, such as weight and inventory turnover.
4. Ensure goods are stored off the ground (to prevent water damage), ideally on shelves or in containers that allow items to be readily accessible, safely stored and counted, with stock cards readily visible.
5. Maintain an updated packing/inventory list that contains key information on contents, weight and total number of packages.
6. Guarantee power supplies and lighting that ensure safety and easy identification of goods.
7. Ensure constant power supply, surge protection and contingency in times of failure to critical areas requiring temperature control and refrigeration, such as food storage and pharmacy.

[60] Universal Logistic Standards Warehouse and Storage. https://handbook.ul-standards.org/en/humlog/#sec067

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Information management systems should be robust and reliable for the field setting, stock cards for example, and if information technology solutions are used, a back-up system must be available.

Guidance Notes

- The space requirement varies per type of EMT but should include areas for inbound and outbound assembly of kits and pallets, sorting and exchange of consumables approaching expiry, as well as an adequate power source to ensure equipment is ready to use.
- Safe handling of heavy weights, particularly if working with multilevel vertical storage facilities, and the safe use of vehicles and loading equipment must observe national regulations on work health and safety.
- Minimum data points for all items include:

id number	name	value	expiry date	serviced date
box number	box weight and volume	dangerous goods	supplier details	Operational status

6.2.6 Pharmacy supply chain and medical stock management

EMTs are self-sufficient with enough pharmaceutical, medical consumables and medical equipment to deliver patient care.

EMTs must be self-sufficient throughout the deployment period, which includes the ability to maintain a range of quality pharmaceuticals and medical consumables based on the EMT typology and appropriate for the context into which they deploy.

MINIMUM TECHNICAL STANDARD

1. EMTs should have a minimum of three days stock supply of pharmaceuticals and medical consumables for national deployment and a minimum of 14 days for international, with a resupply system in place to ensure availability of pharmaceuticals and consumables throughout the deployment period.
2. EMTs need to ensure access to an effective and reliable supply chain of anaesthetic medicines including opioids and analgesia.
3. A complete inventory of deployed items needs to be available electronically and physically at all times and periodic inventory counts should be carried out to maintain an overview of existing stock supplies, tracking of consumption trends and maintaining an audit trail for inventory control purposes.
4. Assign a dedicated space for pharmacy and storage of medical supplies with restricted access.
5. EMTs should have storage boxes appropriate for medical and pharmacy supplies and equipment, ensuring that these are clearly marked and protected from excess heat and moisture.
6. Cold chain drugs and vaccines require specific and technically professional packaging for transport. This must include a temperature tracker to identify breaches in the cold chain.[61]
7. A strict mechanism for monitoring the use of controlled drugs should be established, limiting access to authorized personnel and in accordance with national regulations.
8. EMTs need to ensure access to an effective and reliable supply of oxygen necessary for the medical team to meet clinical standards of care.[62]

[61] MSF Cold Chain Management Guideline 2013; https://bibop.ocg.msf.org/docs/49/L015ZCHG01E_Coldchainguide.pdf

[62] PAHO: COVID-19 Basic Manual on oxygen supply systems in EMTs and AMCS; https://www.paho.org/en/documents/covid-19-basic-manual-oxygen-supply-systems-emts-and-amcs

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Anticipate challenges in the procurement and transport of controlled substances, depending on regulations/restrictions, both in the home country and during international deployments.
2. EMTs should plan for at least 24 hours for national and 72 hours for international response cold-chain transport time system and packaging.
3. Volatile gas management should be taken into consideration for transport plans.
4. All EMTs must perform a calculation of oxygen consumption points within the facility and/or vehicles and ensure the minimum equipment and consumables necessary.

Type 1 and 2

- Provide oxygen supply by cylinders and/ or concentrators.

Type 3

- Provide oxygen supply through cylinders and/or concentrators, or a centralized installation that can be installed in existing central oxygen supply systems, or oxygen sources, such as liquid oxygen tanks, gasifiers and PSA.

Guidance Notes

- The recommended approaches for readiness of stock include either storage in a "ready to go" state and periodical rotation or leaving stock in a central pharmacy warehouse and a "just in time" packing approach or private wholesalers. The chosen solution should consider the best possible way to maintain and access inventory in a timely manner while minimizing waste.
- Medical equipment must be cared for according to manufacturer's guidelines while in storage. This includes battery care and compliance with regular biomedical checks. In general, national standards on frequency of checks should be followed and equipment logs kept for all critical medical equipment, such as ventilators and monitors.
- Safe transport procedures for controlled drugs can be achieved through the hand-carry of a locked transport case containing the required drugs by a designated staff member holding the correct export and import documents, if applicable.

6.2.7 Donation management

For donation of medical consumables, EMTs should have procedures in place compliant with national and international standards for donation of pharmaceuticals, equipment or their entire field facility.

EMTs should have written procedures on the donation of medicines and medical consumables to local health facilities. Caution should be exercise as unneeded donations may lead to over-stocking and expiry of donated products. The procedures should be flexible to the local or national donation policy but should not deviate from recognized medicines and medical equipment donation guidelines.[63]

MINIMUM TECHNICAL STANDARD

1. EMTs should not donate medicines less than six months from expiry date and based on national donation policy that may specify the minimum acceptable remaining shelf-life for donated medicines.
2. All donated medicines or their generic equivalents should be approved for use in the recipient country and should appear on the national list of essential medicines or equivalent or in the national standard treatment guidelines.
3. Medicines must be compliant with international donation rules in terms of expiry dates, packaging and labelling.
4. Medicines and other medical consumables that may expire or damage during deployment must be destroyed in accordance with national protocols and WHO recommendations.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. EMTs should donate equipment compatible with ministry of health procurement and maintenance systems that can be safely used by local staff.[64]
2. EMTs are encouraged to donate technical items including the full field hospital if they can ensure support training, appropriate storage and subsequent use.

[63] Guidelines for medicine donations revised 2010 https://www.who.int/medicines/publications/med_donationsguide2011/en/

[64] Guidelines for health care equipment donations https://www.who.int/medical_devices/publications/en/Donation_Guidelines.pdf?ua=1

6.2.8 Safety and security

EMTs must demonstrate due diligence for the safety and security of their personnel and patients during deployment by putting in place management plans and practical measures appropriate to the operational context and communicate plans to those concerned.

Duty of care in relation to health and safety at work is a generally accepted moral requirement, codified in law as a general principle and often further developed in rules and regulations relating to a particular sector of activity. The work of EMTs should be seen as one such sector, with its own characteristics. A challenge for EMT management is ensuring reasonable and appropriate measures are taken regarding security risks and how to best prepare and care for personnel during and after deployment.

MINIMUM TECHNICAL STANDARD

1. EMT organizations deploying teams owe their staff a legal and moral duty of care concerning their health, safety and security while on and off duty.
2. At the headquarters level, a security policy should be in place and communicated outlining organizational roles and responsibilities in relation to security issues, as well as clearly defining the institutional threshold for acceptable risk.
3. At the field level, EMTs must have a security risk management process in place, including an early warning system.
4. EMTs should have critical incident management systems in place to deal with serious security events during operations.
5. Develop an occupational safety and health plan for workplace safety and the prevention and control of hazards.[65]

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. EMTs need plan for separate facilities for men and women, particularly applicable where gender-mixing is not considered appropriate.
2. Depending on the context, fences can be erected using materials of different types and heights, but general principles should consider good visibility to the health facility to maintain community engagement.

[65] Occupational safety and health in public health emergencies https://www.who.int/occupational_health/Web_OSH_manual.pdf

3. Equipment may include ABC powder extinguishers, CO2 fire extinguishers, fire blankets or other portable fire extinguishers. This needs to be complemented by training, competent staff and evacuation plans and procedures.

Guidance Notes

- The security risk management process must include:
  - a local risk assessment based on the relevant operational context
  - a written security plan
  - a set of practical team and individual measures designed to reduce the impact and/or likelihood of changing security risks during operations. Ideally, this should be led by an identified security focal point within the team.
- EMTs will have a range of security approaches, but all should include liaison with local authorities and arrangements to share security updates quickly with deployed personnel (the principle of informed consent).
- Security contingency plans for the most likely critical incidents should be developed, briefed and rehearsed, including, but not limited to, circumstances involving injury, illness or death of staff, team relocation/extraction, hibernation and other incidents identified as part of the team's risk assessment.
- All EMTs must have adequate fire-fighting equipment and training for their own fire hazards, including the ability to tackle a wide range of fires and a warning mechanism in place.
- Provide outdoor lighting around the health facility, including peripheral areas to allow patients and staff to move safely at night. Lighting for interior clinical areas should be adequate for carrying out medical procedures.

6.2.9 Facility structure, environment and ventilation

EMTs must be able to provide suitable and acceptable facilities for clinical care and staff needs.

EMT must design and use structures and safety measures to ensure that the facility is safe and functional. These include physical and environmental factors such as lighting, fencing, ground preparation and sufficient natural ventilation, which can be supplemented by mechanical ventilation if required. Staff deployed in emergency situations must be able to rely on their EMT organization to provide shelter, services and adequate working conditions that account for their safety and well-being to fulfil their life-saving duties.

MINIMUM TECHNICAL STANDARD

1. Physical space should be in line with WHO minimum standards for patient numbers and space between stretchers,[66] and use of water-resistant material easily cleaned with disinfectants.
2. Selected shelter should be durable enough to withstand the normal wear and tear of the emergency response, the rigors of transport and the climatic conditions in which they are used.
3. Shelters should be of sufficient height to allow clinical care staff to move freely and provide maximum space with vertical/near vertical walls.
4. All patient areas should be designed to allow cross-ventilation and access to people with disabilities or reduced mobility.
5. Flooring should have a solid base and an upper layer with non-slip, wear-resistant, fireproof, waterproof and antistatic surface.
6. All health facilities must include a ventilation system either natural and/or mechanical depending on local conditions.[67]
7. The airflow should always be clear and controlled with unidirectional flow from clean to dirty areas.
8. Separate, well-ventilated areas/wards must be set aside for patients suspected of having infectious diseases.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. EMTs deploying in cold or hot climates must be able to carefully adjust climate control in certain areas to a range of 20–30 °C, including OT, pharmacy, laboratories and patient areas.
2. CO2 measurements could be an acceptable indicator of ventilation rate and air quality as an approximate measure. Accurate and affordable CO2 meters are available in the market to measure indoor air quality.
3. The prevailing wind speed and direction changes depending on the location.[68] Anemometers are recommended equipment to perform and set up wind speed and direction measurements during the site assessment process.

Guidance Notes

- Windows and shading are the most important elements of passive cooling. They are the main source of heat gain, via direct radiation and conduction, and cooling via crossflow and fan-drawn ventilation, cool breeze access and night purging.
- Normal inpatient rooms not intended for patients with infectious diseases require at least four air changes per hour (ACH).
- The presence of mosquito nets reduces the surface area of the opening under consideration by 50%.
- Sufficient ventilation of at least 6 ACH (equivalent to 40 L/s per patient for m^3 room) is a prerequisite for isolation rooms.
- Vestibule or airlock should be used to prevent transmission of infectious agents from the door opening.

[66] WHO Infection Prevention and Control; https://www.who.int/teams/integrated-health-services/infection-prevention-control

[67] Natural Ventilation for Infection Control in Health- Care Settings; WHO 2009; https://apps.who.int/iris/bitstream/handle/10665/44167/9789241547857_eng.pdf?sequence=1

[68] https://globalwindatlas.info

6.2.10 Mobilization

EMTs must be able to mobilize in the shortest possible time ensuring general and institutional interventions to support their operational readiness status.

EMTs mobilization processes are time-critical and require multiple organizational and management chains, often working in parallel. The rapid mobilization and effectiveness of initial actions and familiarity with organizational procedures are essential to organizational readiness and response. Such preparedness also helps to protect team members from added stress due to inadequate training or preparation.[69]

MINIMUM TECHNICAL STANDARD

1. Develop activation protocols with a clear time frame and algorithms or similar to identify the steps needed to mobilize the team and equipment.
2. Communication channels are vital for informing and dispatching trained personnel, securing the release of equipment and obtaining relevant approvals.
3. EMTs must comply with the requirements of the regulatory framework for the transport of dangerous goods and packaging should comply with national and international regulations.[70]
4. Customs clearance procedures must always be anticipated and properly documented (bill of lading, manifests, custom clearances and arrival documentation).
5. EMTs should have at least a primary, 24-hour solution to allow the transport of equipment and cache plus personnel to a field location.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Pre-negotiated arrangements should be in place for cargo movement.
2. EMTs must be able to articulate the weight and volume of their cargo, unloading requirements and the expected arrival times if requesting assistance with local and "last mile" transport.

Guidance Notes

- EMTs have designed their warehouse layout to match pallet loading priority with pre-packaged, labelled and sealed kits. Other EMTs have algorithm activation cards, and additional warehouse surge staff during deployment.
- The labelling system on the equipment boxes shall reflect the contents of the box (either by subject area or by area of the facility), priority level when loading or unloading (in accordance with the first-in last-out criteria) and zone for location of the box within the footprint quadrant.
- Weight/volume of equipment boxes need to be considered when planning for commercial or air freight transport to facilitate ground handling. Options include setting box weight limit so that four people carry or including ground-handling equipment during deployment.
- Some EMTs have created start-up kits for their medical consumables, which roughly equates to three days' worth of the total 14-day supply. This practice can facilitate an initial stock to travel with EMT personnel while the remainder bulk holdings are sent via a cargo solution.

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[69] Quevillon, R.P. et al (2016): Helping the helpers: assisting staff and volunteer workers before, during and after disaster relief operations

[70] UN Model Regulations; https://unece.org/about-recommendations

6.2.11 Site assessment and planning

EMTs are able to assess possible site[71] locations and adapt their configuration to local conditions, including the possibility to work within or reinforce existing health facilities.

EMTs should carefully but timely consider their site assessment and configuration (layout) using pre-defined criteria. Several EMTs are considering sending multidisciplinary teams ahead of the main team to begin preparations and select the most appropriate location based on identified needs. This senior team must have strong technical knowledge and appropriate soft skills and cultural awareness to negotiate access and gain the trust of the community and acceptance of the proposed plan.

MINIMUM TECHNICAL STANDARD

1. Plan the configuration (layout) based on the expected scenarios, taking into account at least two different ground constraints (vertical/horizontal).
2. Perform site assessment including security and safety risks using a validated tool by an advance multidisciplinary team or team members prior to staff and cargo mobilization to the site.
3. EMTs must be able to operate in urban and spatially limited environments as well as in rural and remote locations.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Plan in advance for potential expansion in case of mass casualty incidents or outbreak as the latter can lead to complications, especially if building extensions will require workers to wear PPE.

Guidance Notes

- The first sketch of the ground plans on site facilitates the start of drainage and levelling work prior to construction, while the equipment is en route.
- The levelling and preparation of the ground facilitates the following phases of the work, including drainage of water, erection of tents and structures. As Type 2 and 3 might include machines to facilitate such work, this form of intervention requires the consent and commitment of the community.

71 Physical location for the setting up of the structures and the provision of health care

6.2.12 Sequential build

EMTs must prioritize the establishment of their facility in a way that areas and services necessary for urgent patient care are established first while the rest of the facility is completed, allowing certain functions to be operational before deployment is fully completed.

EMTs need to be prepared during time-critical responses to sudden onset disasters (SOD) to treat acute patients in the shortest possible time, including those presenting during the establishment of the facility. This may include surgical procedures, while post-operative and inpatient wards are completed. EMTs can reduce their operational time from arrival to the assigned site to initial patient care through appropriate planning and strategies.

MINIMUM TECHNICAL STANDARD

1. Anticipate, plan and consolidate cargo load and offload order to allow appropriate elements to be available first upon arrival at destination.
2. Put in place a clear, step-by-step approach to sequential build-up considering prioritization of health-care services, staff safety and well-being.
3. Practical exercises for the sequential build-up of temporary facilities should be carried out regularly (at least once a year) to improve safety precautions and reduce deployment and construction time.
4. Information and communication, key messages and consultation with communities must be included in this process.

Guidance Notes

- Mark each package with coloured stickers after the setup phase. These stickers indicate loading priority. At local reception, such as the airport of entry, the stickers indicate priority of dispatch to the deployment area. On-site, they specify priority, technical family and zone of unloading within the layout grid on site.
- Possible rules for sequential building includes acute care sections, the necessary operational support followed, where appropriate, by critical surgical capacities and inpatient areas. The remaining care areas and less critical clinical and operational support areas will follow shortly afterwards. Critical safety and welfare areas for staff should be made available as soon as possible.

6.2.13 Demobilization

EMTs should have plans and procedures for coordinated demobilization that maximizes the time of operation and minimizes disruption, supporting recovery of normal local health services and local environmental impact.

It is important that the demobilization phase of each EMT is synchronized with the exit strategy and the phasing out or transition of clinical care provision to local providers or agreed alternative. EMTs require a planning framework for demobilization, which must cover the necessary human and financial resources, to ensure that EMT can be efficiently demobilized without disruption of health services. This important phase, often referred to as "reverse logistics", includes repackaging within an acceptable time frame to facilitate readiness for future operations. Checklists are useful and exit planning should begin as soon as the deployment is considered.

Guidance Notes

- Particular attention must be paid to the treatment and closure of the waste management and sanitation sector, taking into account measures such as chemical treatment and sealing of pits with concrete.
- Consider increasing the number of additional members of the operational support team to cope with the increased workload during the reverse logistics phase.
- Several EMTs have pre-coded their centralized packing list with a scale of essential to return, likely and not likely to return as part of their reverse logistics plan.

MINIMUM TECHNICAL STANDARD

1. Definition of procedures and key actions for managing the demobilization process including a phased approach, so that nonessential clinical and operational support services are dismantled first, with training to all team members.
2. Plan for reverse logistics when required which contributes to properly dealing with hazardous material, recycling of goods, obsolete equipment or unused commodities.
3. Packaging for transport, including dangerous goods management. Weighing and volume estimations will need to be carried out for road, air or sea transport phases.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Coordinate exit and handover of services, equipment and consumables with local health authorities/EMTCC at least seven days before shutdown.
2. Community engagement should be undertaken well in advance with clear messages about alternative service plans, nearby health facilities and other EMTs.
3. Prior to deployment, plan and prepare a description and analysis of the elements to be discarded, reused or donated.

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6.3 Operations support (WASH) technical standards

WASH technical standards that govern many of the IPC standard precautions and self-sufficiency of EMTs.

WASH technical standards (summary table)
Water supply: EMTs must ensure that patients, caregivers and staff have at all times sufficient safe drinking water at all times, distributed through appropriate water collection points and facilities, to enable medical activities, personal hygiene, drinking, cooking, cleaning and laundry activities.
Hygiene: EMT should ensure that staff and patients can practice hand hygiene throughout the facility by promoting access to and culturally appropriate materials and places for handwashing, as well as adequate access to showers and safe spaces and materials for personal and menstrual hygiene.
Environmental cleaning: EMT facilities and the immediate environment should always be kept clean and hygienic. All types of EMT should have documented procedures and appropriate materials for immediate, routine and terminal cleaning to reduce the risk of infection.
Health-care waste management: EMTs are responsible for the safe management and disposal of health waste generated at their facilities. Safe health care waste management involves multiple steps from minimization, segregation, collection, storage, treatment and final disposal.
Sanitation: EMTs must ensure that patients, staff and caregivers have accessible, appropriate, safe and sufficient facilities and well-documented procedures for management of excreta, grey waters and storm waters to limit disease transmission.
Vector and pest control: EMTs should ensure that patients, staff and caregivers are protected from disease vectors and pests, by using appropriate equipment and methods adapted to local context.
Dead body management: EMTs need to be able to manage dead bodies in a way that is dignified, culturally appropriate, safe and in accordance with public health practices.

6.3.1 Water supply

EMTs must ensure that patients, caregivers and staff have sufficient safe drinking water at all times, distributed through appropriate water collection points and facilities, to enable medical, personal hygiene, drinking, cooking, cleaning and laundry activities.

EMT must provide or access a robust water supply capacity, with redundancy in the event of supply disruptions. Without safe water, EMTs cannot provide safe health care and risk exposing staff, patients and local populations to infectious disease transmission and worsening public health problems. EMTs need to ensure the availability of technical expertise to carry out water management activities, which again underlines the need for a strong component to support the operation of each EMT.

MINIMUM TECHNICAL STANDARD

1. Adequate equipment is in place to treat sufficient raw water according to the needs per EMT type and expertise to ensure proper functionality.
2. Perform water quantity calculation[72] based on recommended minimum standards:
   - 40–60 litres per staff member per day
   - 5 litres per outpatient
   - 40–60 litres per inpatient per day
   - 100 litres per surgical intervention and delivery
3. Ensure that treatment technologies/procedures for treating water from available local raw water resources comply with WHO standards[73, 74] and national regulatory standards.[75]
4. Water is treated with a disinfectant so that there is a free residual chlorine at the tap of 0.5–1 mg per L[76] and turbidity is below 5 nephelometric turbidity units (NTU). There are no faecal coliforms per 100 ml[77] at the point of delivery.

[72] WHO How much water is needed in emergencies; WHO; https://www.who.int/water_sanitation_health/emergencies/WHO_TN_09_How_much_water_is_needed.pdf?ua=1; "Additional quantities may be needed for other consumption such as laundry, ambulance-washing and other elements should be considered in the total calculations."

[73] WHO Guidelines for drinking-water quality https://www.who.int/water_sanitation_health/publications/drinking-water-quality-guidelines-4-including-1st-addendum/en/ 70 WHO
Safe Drinking Water from desalination https://apps.who.int/iris/bitstream/handle/10665/70621/WHO_HSE_WSH_11.03_eng.pdf?sequence=1

[74] WHO Safe Drinking Water from desalination https://apps.who.int/iris/bitstream/handle/10665/70621/WHO_HSE_WSH_11.03_eng.pdf?sequence=1

[75] WHO A global overview of national regulations and standards for drinking-water quality. http://apps.who.int/iris/bitstream/handle/10665/272345/9789241513760-eng.pdf?ua=1

[76] WHO WEDC Measuring Chlorine levels in water supplies http://www.who.int/water_sanitation_health/emergencies/WHO_TN_11_Measuring_chlorine_levels_in_water_supplies.pdf?ua=1

[77] A summary catalogue of microbial drinking water tests for low and medium resource settings. https://www.mdpi.com/1660-4601/9/5/1609/pdf

5. Ensure that water quality and safety analysis test kits are available and functional and keep records of water quality and safety analysis.
6. Ensure a minimum storage capacity of 48 hours of drinking water to ensure a constant water supply even in the event of short-term interruptions.
7. Training of staff in the management of aspects of sourcing, treatment storage and supply of water systems.
8. Type 2 and 3 require the installation of a pressurized water supply system to ensure adequate water supply at all times, especially in critical clinical areas.
9. Provide sufficient drinking water delivery points in each waiting area, clinical work areas, food preparation points, dining rooms and staff rest areas.

Guidance Notes

- Testing for E-coli typically takes 24 hrs to complete and conducting such tests in a response phase of an emergency may be impractical for every load of water that moves through the EMT system.
- Using a multi-barrier approach to water treatment is the best way to reduce the risk of unsafe water use.[78] Every step of the process, from source protection to water treatment and safe storage, helps to reduce health risks.
- Consider installing foot, elbow or sensor infrared taps to minimize the risk of cross-contamination at all end-user water supply points or handwashing stations.
- Anticipate the need for extra equipment such as submersible or centrifugal pumps or transport equipment that permits adaptation to a wider range of situations, including the collection of water and its transport to the treatment area.

[78] Centre for Affordable Water and Sanitation Technology. Fact sheets on HWTS methods. http://www.cawst.org/en/resources/pubs

6.3.2 Hygiene

EMTs should ensure that staff and patients can practice hand hygiene throughout the facility by promoting access to culturally appropriate materials and places for handwashing, as well as adequate access to showers, safe spaces and materials for personal and menstrual hygiene.

Effective hand hygiene in health-care facilities has been the cornerstone of infection prevention and control and is the primary measure for preventing health-care associated infections and the spread of antimicrobial resistance. It is essential for EMTs to provide handwashing facilities with soap and water in clinical areas and toilets.[79] Staff and patients need access to showers and water points for personal hygiene in gender-segregated areas. Women and girls must have culturally adequate access to safe spaces with adequate washing facilities and products to perform menstrual hygiene management (MHM). EMT staff should understand the practices, norms and beliefs associated with MHM in local communities.

MINIMUM TECHNICAL STANDARD

Hand Hygiene

1. Provision of handwashing stations[80] in clinical areas, including each ward, OT, emergency room, delivery room, isolation units, outpatient clinics and other clinical, laboratory and similar health-care and other services areas.
2. Provision of hand hygiene stations with hand disinfectant/alcohol handrub solution in any clinical area.[81]
3. Provision of handwashing stations within 5 meters of the toilets, at food preparation and food consumption areas, and between clinical and staff rest area transition points.
4. There should be at least two hand hygiene stations in a ward with more than 20 beds.
5. Clearly visible and understandable hand hygiene information, education and communication (IEC) promotion materials to be placed at key locations.

[79] 2009 WHO Guidelines on Hand Hygiene in Health Care https://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906_eng.pdf?sequence=1

[80] All hand washing stations must have water and soap, taps or elbow pedal pumps, paper for drying hands and a garbage container for disposal of hand drying paper.

[81] "Hand washing stations "refers to hand-wash with water and soap, while "hand hygiene stations" embraces both hand rub with alcohol-based solution and hand washing stations

Personal hygiene

6. Set up adequate and separate showers (for men and women) for inpatients and staff in an accessible and safe area.
7. Provide hygiene materials to patients for their use in the health facility with special consideration for those with reduced mobility, special conditions due to their disease or cultural concerns.
8. Display posters on best practices in personal hygiene and respiratory etiquette.
9. Provision of suitable spaces within inpatient facilities for women and girls to carry out menstrual hygiene practices, including washing facilities within toilet areas.[82]

Guidance Notes

- WHO recommends handrub formulas for local production,[83] all alcohol-based with ingredients easily accessible.
- Food preparation facilities should be carefully kept clean and respect the Five Keys to Safer Food.[84]

[82] A toolkit for integrating menstrual hygiene management (MHM) into humanitarian response https://www.susana.org/_resources/documents/default/3-3083-7-1522225986.pdf

[83] Guide to local production: WHO recommended hand rub formulations; https://www.who.int/gpsc/5may/Guide_to_Local_Production.pdf https://www.who.int/publications/i/item/WHO-IER-PSP-2010.5

[84] WHO Five keys to safer food manual. https://www.who.int/foodsafety/publications/consumer/manual_keys.pdf

6.3.3 Environmental cleaning

EMT facilities and the immediate environment should always be kept clean and hygienic. EMTs should have documented procedures and appropriate materials for immediate, routine and terminal cleaning to reduce risks of infection.

Environmental cleaning (here referred to as cleaning) is an essential part of infection prevention and control and is considered one of the most important measures to prevent infections in public health and the spread of antimicrobial resistance.[85] EMTs must have protocols for the routine cleaning of facilities and clinical care areas after patient contact (terminal cleaning), such as after surgery or discharge of patients, and for the management of spills and body fluids. The frequency of cleaning and disinfecting individual objects or surfaces in a particular area depends on several factors, including the surface, the type of activity in that area and the associated risks of infection. Isolation and sterilization areas have the highest demand for stringent IPC practices and schedules for cleaning and disinfection. EMTs require laundry solutions for staff and special laundry for patients when using reusable items (meaning larger teams).

MINIMUM TECHNICAL STANDARD

1. Definition of immediate, routine and terminal[86] cleaning protocols for different areas of the EMT facility.
2. Clean, disinfect or sterilize reusable medical devices depending on risk before each use.
3. Cleaning kits should be available and clearly marked by risk areas to avoid cross-contamination.
4. Spill kits should be available in every clinical area to deal with acute blood and body fluid contamination immediately.
5. Education and training should be made available to all staff.
6. Establish a monitoring system to ensure that cleaning protocols are properly applied as well as a mechanism for tracking and restoring cleaning materials.[87]
7. Set up a specific area for collecting, washing, rinsing and drying clothes and linen. EMTs require special laundry services for staff.

[85] CDC Best Practices for Environmental Cleaning in Healthcare Facilities: in Resource-Limited Settings.2nd Ed. https://www.cdc.gov/hai/pdfs/resource-limited/environmental-cleaning-RLS-H.pdf

[86] Immediate cleaning is the cleaning of blood or other body fluids, contaminated fluids or other visible dirt. Regular cleaning is the cleaning of the clinical care areas and the operational support, coordination and living areas. Terminal cleaning is the cleaning of the clinical care areas after each discharge of the patient, and the thoroughness of cleaning depends on the type of care (surgical operation versus outpatient consultation, etc.).

[87] CDC Options for Evaluating Environmental Cleaning https://www.cdc.gov/hai/pdfs/toolkits/Environ-Cleaning-Eval-Toolkit12-2-2010.pdf

6.3.4 Health-care waste management

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Defined risk zones by assessing the likelihood of contamination and the required degree of asepsis. This can be achieved by dividing the areas into four zones: no patient contact; clinical areas for those not infected or highly susceptible; isolation units; and highly susceptible patients (protective isolation) or protected areas.
2. Set up a washing area for the cleaning and decontamination of reusable equipment, stretchers and auxiliary equipment.

Guidance Notes

- The cleaning of all areas, floors and horizontal work surfaces should be done daily with water and detergents and more frequently in times of heavy use or accidental nonclinical spills.
- Clean and disinfect surfaces or objects contaminated with blood, other bodily fluids, secretions or excreta as quickly as possible using standard hospital detergents/disinfectants.

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EMTs are responsible for the safe management and disposal of health waste generated at their facilities. Safe health-care waste management involves multiple steps: minimization, segregation, collection, storage, treatment and final disposal.

EMTs should be familiar with and adhere to national and WHO waste management policy, regulations, procedures and approval processes.[88] Waste management procedures must be well-documented and supported by appropriate equipment and evidence of staff training. Of particular importance is safe disposal of infectious medical waste and waste liquids, sharps, discarded medications and chemicals. Whenever possible, minimize the amount of waste produced and if practicable and safe, consider waste products that can be recycled for reusage. To reduce impact on health and the environment waste that cannot be recycled must be treated with the least harmful options, including treatment or disposal.[89]

MINIMUM TECHNICAL STANDARD

1. Development of SOPs for waste management. These should cover the entire cycle and be available to staff, including those recruited locally, in written and visual form.
2. Training all staff in waste management practice with specialized training for staff responsible for the collection, treatment and disposal of waste.[90]
3. Provision of PPE for staff responsible for the handling of waste.
4. Organize segregation and separate storage, collection, and disposal of health-care waste, at least into the four major categories of general, sharps, infectious waste and other hazardous waste.
5. Determine a safe designated waste storage area within the EMT site and consider a minimum 2-day containment capacity for waste production.
6. Planning of waste treatment in accordance with local and international laws and regulations.[91]

[88] WHO. Safe management of wastes from health-care activities. https://www.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf?ua=1

[89] WHO/WEDC Technical Notes Solid waste management in emergencies https://www.who.int/water_sanitation_health/emergencies/WHO_TN_07_Solid_waste_management_in_emergencies.pdf?ua=1

[90] WHO Training modules in health-care waste management. https://www.who.int/water_sanitation_health/facilities/waste/training_modules_waste_management/en/

[91] http://www.basel.int/ http://chm.pops.int/

7. Implement an infectious waste treatment technology based on incineration or non-incineration.[92, 93, 94]
8. Waste management plan foresees that waste pits be constructed in accordance with existing national and international standards and will be operated, maintained and decommissioned safely.

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. WHO recommends vaccination of all health-care waste handlers for hepatitis B and tetanus.[95]

Guidance Notes

- Provide sharps containers that meet WHO standards in all areas where sharps are used.
- Ensure that the equipment used for transport of waste is spill and puncture proof, easy to clean and disinfected daily.
- Designated waste storage sites should be protected and fenced from water/ rain and pests and with an appropriate mechanism to prevent access to unauthorized staff and the local population.

[92] Overview of technologies for the treatment of infectious and sharp waste from health care facilities WHO 2019. https://apps.who.int/iris/bitstream/handle/10665/328146/9789241516228-eng.pdf?ua=1

[93] UNEP Compendium Technologies for Treatment Destruction of Healthcare Waste https://wedocs.unep.org/bitstream/handle/20.500.11822/8628/IETC_Compendium_Technologies_Treatment_Destruction_Healthcare_Waste. pdf?sequence=3&isAllowed=y

[94] Global inventory of Alternative waste treatment technologies http://medwastetech.info/

[95] Summary of WHO Position Papers – Immunization of Health Care Workers https://www.who.int/immunization/policy/Immunization_routine_table4.pdf?ua=1

6.3.5 Sanitation

EMTs must ensure that patients, staff and caregivers have accessible, appropriate, safe and sufficient facilities and well-documented procedures in place for management of excreta and grey and storm water to limit disease transmission.

EMTs should have accessible, safe, clean and culturally appropriate toilet facilities for patients waiting for and undergoing treatment. Sanitation in health-care facilities should ensure the hygienic separation of excreta from human contact. Sanitation facilities are also important for dignity and human rights and have an important gender element, as toilets should ensure privacy and safety for the needs of women and girls. Grey and black water waste management, possibly supplemented by a sewage treatment plant on site, meaning a septic tank with subsequent drainage pit, provisional retention system, or safe sewage disposal directly into a functioning sewer system are the top priority of EMT sanitation policies.[96]

MINIMUM TECHNICAL STANDARD

1. Provide adequate and sustainable sanitation facilities for all team members and locally engaged staff, as well as sanitation facilities for outpatient and inpatient care adapted to children.[97]
2. Toilets and sinks for staff and patients should be clearly separated and marked.
3. Calculate the proportion of toilets per user type (inpatient, outpatient, staff) following recommended ratio (toilet/per person) considering gender ratio, people with disabilities, children and isolation patients.
   - Outpatients 1 : 50
   - Inpatients 1 : 20
   - Team members 1 : 20
   - Isolation patients 1 : 20 (for cohorted isolation)
   - Isolation patients 1 : 1 (for individual isolation)

   At least one gender-neutral toilet must be accessible to users with reduced mobility, in line with standards.[98]

[96] WHO Guidelines on sanitation and health http://apps.who.int/iris/bitstream/handle/10665/274939/9789241514705-eng.pdf?ua=1

[97] WASH Cluster Compendium of Sanitation Technologies in Emergencies http://www.washcluster.net/emersan-compendium

[98] UNHCR WASH Universal Access Checklist. https://wash.unhcr.org/download/wash-universal-access- checklist/?wpdmdl=541&ind=Ri0xMDEgVU5lQ1lgV0FTSCBVbml2ZXJzYWwgQWNjZXNzIENoZWNrbGlzdCAoVU5lQ1lsIDIwMTUp LnBkZg

4. Availability of sanitation systems that can be adapted to different local soil conditions (soft/hard) and ground water levels as well as adapted to local cultural behaviours.[99]
5. Plan for the accessibility component for management and maintenance of sewage tanks, drainage/sewer shafts.
6. Ensure adequate lighting and locking mechanisms within toilets and showers which should be clearly marked and located close enough to wards and patient areas to provide safe access in a way that reduces the risk of violence, especially sexual and gender-based violence (SGBV).[100]
7. Plan alternatives for safe faecal sludge and grey water management through containment and on-site treatment in case local structures are inaccessible.[101, 102]

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Faecal sludge should be emptied and transported in a way that protects service providers, families, communities and the environment.
2. Plan the deployment of basic first-phase sanitation solutions to be used during the setup of the facility.[103, 104]

Guidance Notes

- Solutions to adopt during the first phase of the response include portable toilet with plastic bag and absorbent granules, packet latrines, bucket latrines, commode latrine and chemical toilets.
- Particular attention needs to be paid to infectious grey water produced in sterilization or in isolation wards.

[99] WEDC Excreta Disposal in Emergencies: A Field Manual. Chapter 6: Strategies for Difficult Situations https://www.unhcr.org/49db13ad2.html

[100] The Sphere Handbook 2018; https://spherestandards.org/wp-content/uploads/Sphere-Handbook-2018-EN.pdf

[101] https://emergencysanitationproject.org/sludge-reservoirs/ https://emergencysanitationproject.org/wp-content/uploads/2019/08/fact-sheet-deployable-septic-tank-kit.pdf

[102] EAWAG Greywater Management https://sswm.info/sites/default/files/reference_attachments/MOREL%20and%20DIENER%202006%20Greywater%20Management.pdf

[103] WEDC Excreta Disposal in Emergencies: A Field Manual. Chapter 4: 1st Phase Technical Options. https://www.unhcr.org/49db13402.html

[104] Compendium of Faecal Sludge Management (FSM) Technical Options in Emergencies http://www.washnet.de/wp-content/uploads/washnet_wie15_fsm-compendium_150910.pdf;

6.3.6 Vector and pest control

EMTs should ensure that patients, staff and caregivers are protected from disease vectors and pests by using appropriate equipment and methods adapted to the local context.

Effective vector and pest control is essential for the health of staff, patients and the general public. EMTs should establish routine measures that control pests and vectors (identification of agent, vector control, environmental hygiene, personal protection, surveillance).[105] Vector control should be supported by appropriate, context-specific equipment and reflect the EMT operating environment on a personal, operational and environmental level. Appropriate and effective methods to exclude or reduce the number of vectors depend on the type of vector, reproductive methods, the habits of the vector, including the places and times they rest, feed, sting or bite, and the resistance of certain vector populations to chemicals used to eradicate them. A three-tier approach to the safety of staff and patients can be considered through personal, facility and environmental level measures.[106] All vector control measures should be agreed with state regulations and local community.

MINIMUM TECHNICAL STANDARD

Personal

1. Protect patients and caregivers against vectors by barrier methods such as installing insecticide-treated mosquito nets.
2. Protect staff with a multilayer strategy that includes some of the following vector and pest control measures:
   - personal protective clothing (long clothes, shoes)[107]
   - use of personal insect repellent
   - insecticide-treated bed nets (ITNs)[108]
   - treatment of lice infestation
   - use of malaria prophylaxis and vaccination (for example yellow fever).

[105] WHO Global Vector Control Response-2017_2030 http://apps.who.int/iris/bitstream/10665/259205/1/9789241512978-eng.pdf?ua=1

[106] WHO Handbook for integrated vector management https://apps.who.int/iris/bitstream/handle/10665/44768/9789241502801_eng.pdf?sequence=1

[107] WHO Guidelines for personal protection when applying pesticides. https://apps.who.int/iris/bitstream/handle/10665/330917/9789240000223- eng.pdf?sequence=1&isAllowed=y

[108] WHO Questions and answers on new types of insecticide- treated nets; 2020; https://www.who.int/teams/global-malaria-programme/prevention/vector-control/new-types-of-insecticide-treated-nets

Facility

3. Implementation of vector and pest control measures through a multilayer strategy, which includes elements such as insect screens (doors and windows), residual contact insecticide, adhesive and mechanical traps, safety feeders and spatial repellents.

Environment

4. Fences are required as basic environmental control methods.

Guidance Notes

- Site planning, weather patterns and local pest and disease patterns will influence which environmental controls are most appropriate. Examples include adequate drainage during the rainy season to reduce mosquito larvae, and adequate waste management areas to reduce flies near health facilities.
- Vector control methods should be selected and combined according to local settings. Prior to the deployment, verify the zoonotic and vector-borne diseases present in the territory, and existing control programmes.

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6.3.7 Dead body management

EMTs need to be able to manage dead bodies in a way that is dignified, culturally appropriate, safe and according to public health practices.

EMTs must be able to respectfully, temporarily store dead bodies aiming to preserve and facilitate identification of the deceased and help families discover the fate of their loved ones. This applies to patients who died during outpatient or inpatient care and those who are brought to the facility by family members. International EMTs should liaise and coordinate with the ministry of health and other relevant local authorities to be familiar with and comply with national policies, regulations and procedures for adequate dead body management. EMT facilities are not expected to be able to support forensic pathology, disaster victim identification or mass fatality storage.[109]

MINIMUM TECHNICAL STANDARD

1. Determine a dead body management procedure which should include a tagging and identification process (including photography) of any dead body or body part within the morgue.
2. An area (tent) should be used as a temporary morgue before releasing dead bodies to relatives or their communities for disposal according to local custom and practice. This is not applicable to Type 1 Mobile.

   Type 1 fixed
   - Ensure the ability to store two dead bodies in a dedicated tent.

   Type 2 and 3
   - Ensure the ability to store at least four bodies in a dedicated tent in a temperature-controlled environment.

3. Report all deaths daily to the EMTCC as essential data items within the Minimum Data Set (MDS) or equivalent.
4. When handling any dead body or body parts an adequate level of PPE is required.[110]

RECOMMENDATIONS FOR OPTIMAL PATIENT CARE

1. Consider the ability to store a large number of dead bodies based on the context and event and ensure a sufficient supply of body bags.
2. Families should be able to visit the morgue and religions and cultural aspects should be considered.[111]
3. Whenever possible provide a simple visual area separated from the morgue for identification and mourning before the body is removed.

[109] Management of Dead Bodies after Disasters: A Field Manual for First Responders. Second (revised) Edition. https://iris.paho.org/bitstream/handle/10665.2/31295/9789275319246-eng.pdf?sequence=1&isAllowed=y

[110] Infection prevention and control for the safe management of a dead body in the context of COVID-19 https://apps.who.int/iris/handle/10665/334156

[111] NOTE that this may also apply to body parts surgically removed from living patients and advice from the relevant Ministry of Health regarding the return of body parts to the patient after discharge should be considered.

Annexes

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Annex 1.
EMT governance structure – roles and responsibilities

The Strategic Advisory Group (SAG) is responsible for providing guidance at the global level and is charged with advising on policies and strategies, monitoring progress, and providing guidance on future directions and priorities for the EMT Initiative. It is chaired by an EMT Global Chair and composed of representatives from a broad range of stakeholder groups, including: Members States representing regional groups and organizations; Member States recently affected by an emergency; donor countries as representatives from the EMT Core Support Group;[112] secretariats of partner networks, such as the Global Outbreak Alert and Response Network and the Global Health Cluster; the International Search and Rescue Advisory Group; the United Nations Office for the Coordination of Humanitarian Affairs (OCHA); the International Red Cross and Red Crescent Movement; and WHO and observers.

The EMT Regional Groups are conceived as the main forum at the regional level allowing for Member States, EMTs and other stakeholders to shape, guide and drive the implementation of the EMT Initiative. EMT Regional Groups have been established in all six WHO regions, with support from the respective WHO Regional Office as Regional Secretariat. The purpose of the Regional Groups is to develop and agree on their respective regional work plans adapting the global objectives of the EMT Initiative to regional and country-specific contexts, as well as contributing to and influencing the global level strategic orientation of the EMT Initiative.

ADVANCING THE EMT INITIATIVE IN WHO REGIONS

In some regions, WHO Regional Committees have formally endorsed the EMT Initiative (Americas). Some regional intergovernmental organizations have also adopted resolutions or declarations recognizing and promoting the EMT guiding principles and minimum standards, such as the Union of South American Nations (UNASUR) and the European Union. Others are coordinating specific EMT capacity strengthening projects including the Association of Southeast Asian Nations (ASEAN), underlining their role as key stakeholders and promoters of the EMT Initiative in their regions.

[112] Given the resource requirements for the implementation of the EMT Initiative and the intention to continuously expand the donor base, WHO has created an EMT Core Support Group (CSG) whose role is to provide a forum for donors who provide, or are interested in providing, direct support (financial or in-kind) to the EMT Initiative to express their ideas and concerns directly to the WHO EMT Secretariat and wider WHO Health Emergencies Programme.

The technical working groups (TWGs) are time bound groups endorsed by the SAG to address clinical, operational and policy gaps. Their main function is to gather evidence on the subject at hand and provide recommendations and suggested minimum standards or guidance in the area identified.

Composed of members with proven experience in the respective subject matter they are nominated by their own organizations. Final selection of the members, including the chair, is based on predetermined criteria and the composition of the TWGs and ideally includes members drawn from all six regions. Endorsement of the membership sits with the EMT Secretariat and SAG.

WHO supports the coordination of the EMT Initiative at regional and global levels and hosts the Global EMT Secretariat[113] based in headquarters. The functions of WHO as Secretariat to the EMT Initiative are: (1) support Member States and EMT providers with technical assistance and advice on strengthening EMT capacities including coordination capacity at country level; (2) when required, support Member States in the activation and coordination of the deployment of EMTs (national and international teams) and coordinate the support provided to Member States by the international EMT community; (3) manage the Global Classification for internationally deployable EMTs; (4) safeguard the EMT guiding principles and minimum standards and act as convenor of the TWGs to ensure continued progress and development of EMT methodology; and (5) provide Secretariat support to Global and Regional Chairs and different governance bodies and maintain key partnerships for the promotion of the EMT Initiative.

Key stakeholders of the EMT Initiative include:

- National health authorities with the main responsibility of ensuring access to health care during disasters, outbreaks and/or other emergencies.
- Organizations or institutions (governmental or nongovernmental, civilian or military, national or international) with the capacity to provide direct clinical care as surge to a population affected by all hazards emergencies have a coordination or norm-setting role related to the work of EMTs, or can provide complementary expertise or resources, including WHO as Secretariat.
- Donors given the resource requirements and actual business case of the EMT Initiative.

[113] The WHO provides the Secretariat to the EMT Initiative and in accordance with the World Health Assembly document 68/27, has strengthened the EMT unit to contribute to the development of a global health emergency workforce. Since then, WHO has pursued a strategy to designate EMT focal points in each of the WHO Regional Offices who act as regional Secretariat to the EMT Initiative.

Finally, but no less important, the EMT Initiative relies on its members and their appointed focal points. Like the stakeholders, they can influence and be influenced by the governance structures of the Initiative.

Members are governments, organizations, institutions and teams that have informed the WHO Secretariat at regional or global level of their willingness to commit to EMT guiding principles and standards and participate in the EMT Initiative at the appropriate level. They are required to designate a national, organizational or team-level focal point and communicate these details to the EMT Secretariat. EMT focal points are the primary contact and counterpart for the regional and global EMT Secretariat. Depending on the context, focal points may exist at different levels, including at the policy, operational or team level.

Annex 2.
The Global Classification

The EMT Global Classification process is organized into eight stages.

1. **Expression of interest:** The candidate team applies online indicating the type of EMT or specialized care team in which it wants to be classified. The Global and Regional EMT Secretariat conducts an interview that completes the Global Classification application.

2. **Self-assessment:** The candidate team performs a self-assessment against the guiding principles, core and technical standards to define the starting point and accompanying needs to meet the international minimum standards for their declared type.

3. **Mentor assignment:** The EMT Global Secretariat, in agreement with the Regional EMT Secretariat, assign a primary mentor to accompany the team throughout the process until final verification. The mentor and team have access to a pool of technical experts to help clarify questions regarding clinical, logistical or WASH related topics.

4. **Mentorship process:** The candidate team begins the process to conform to the international minimum standards by reviewing their SOPs and/or developing new ones; training their staff; adapting their clinical, logistical and WASH equipment; and compiling documentary evidence. The mentor accompanies the entire process, which should start with an initial visit and be followed by continuous monitoring through regular contacts and progress reports.

5. **Pre-verification visit:** The candidate team must present to the mentor a complete evidence package in advance of the visit. The package includes all SOPs and relevant documents, a list of equipment ready to be deployed and the complete trained staff roster. The objective of this pre-verification visit is to check that all the necessary elements are in place to proceed to the next phase. Deciding whether the candidate team is ready to be verified should be a consensus between team and mentor.

6. **Verification visit:** Formal moment when a peer review team assesses the candidate team meets international minimum standards and recommends its classification in the category it applied for.

   The EMT Global Secretariat and/or the EMT Regional Secretariat lead the visit. The verification team writes a report and signs a formal letter addressed to the WHO Director-General recommending the team for classification. Six months after the verification visit there might be a follow up contact to assess the degree of progress regarding the recommendations made in the report.

7. **International registration:** Once the EMT global Secretariat has validated the verification visit report the team is included in the global register of internationally deployable EMTs. The registration is valid for a period of five years.

8. **Reclassification:** After five years from classification the team must certify that it continues to meet international minimum standards and that it has adapted to new protocols and/or standards defined by the EMT initiative.

Roles and responsibilities in the classification process

The EMT Global Secretariat is ultimately responsible for the Global Classification, ensuring the overall coordination and follow-up of teams and mentors. It also confirms the necessary resources for development of the Global Classification are in place and controls all stages of the process to ensure they are carried out correctly.

The EMT Regional Secretariat in each of the six WHO regions are co-responsible for the process. It supports the coordination of teams and mentors in each region, collaborates with necessary resources and supports resolution of barriers or conflicts that might arise between teams and mentors or in any step of the process.

Teams that want to be classified and registered for international deployments undertake to work, within a limited period of time, to meet international minimum standards. The organization must commit to being equipped with appropriate resources and having the right personnel, necessary equipment and protocols duly established and tested.

Mentors commit to provide technical support and advice (relevant to expertise) throughout the process with recommendations on how the team can reach the international minimum technical standards.

Mentors provide regular updates to the EMT Secretariat regarding progress and status of their allocated teams and a fair and impartial recommendation on verification readiness of the team.

Peer reviewers are responsible during the verification visit to check that the team complies with the guiding principles, core standards and technical standards of the EMT Initiative.

Annex 3.
Guiding principles

GUIDING PRINCIPLES

SAFE CARE

Avoidable patient harm resulting from unsafe care has the potential to cause significant human suffering, financial loss and negatively impact trust in health systems. EMTs acknowledge that the provision of safe care is a global health priority and reaffirm the medical ethos of "first, do no harm".[114] EMTs commit to develop the structures, supplies, staff and systems needed to provide care that is safe and avoid unnecessary physical and psychological harm for patients or their caregivers.

Remembering that EMTs will respond in difficult circumstances and in emergency situations, this principle should include the adaption of EMTs to "do the most for the most" and contribute to safe care (or quality care) even in austere environments.

APPROPRIATE RESPONSE

An appropriate response is needs driven, people-centred, effective and efficient. Offers of EMTs and their subsequent deployments should be driven by the expected and/or identified needs based on impact assessments carried out by ministries of health and other relevant ministries.

EMTs may be created for local and national response, but if deployed out of their province or into a neighbouring country they are required to deliver care that is adapted to the needs of the population they are working in and for the context of the specific emergency, rather than the context of their normal place of work. EMTs should be cautious not to start treatments that have no outcome or follow-up strategy after the team demobilizes.

This includes adapting the range of services to match the needs of the population, by taking into consideration and adjusting in emergencies to the change in specific health needs quickly. For example, in earthquakes needs change from trauma to primary care and endemic disease care within days of even the worst natural disaster. This also means adapting clinical care and operations protocols to comply with national protocols and procedures.

In addition to being needs driven, response is people-centred (respectful of the preferences, values and beliefs of the community receiving support); effective (provision of evidence-based health-care); and efficient (maximizes benefits and minimizes waste).

EQUITABLE CARE

EMTs services are accessible to all patients and members of the community based on their medical needs and not according to their ethnicity, religion, gender, age, political affiliation or other factors. Access to health care in an emergency is a basic human right. EMTs must strive to contribute to true geographic coverage and facilitate access for the population in a coordinated manner and not congregate around "easy to reach" areas.

EMTs are expected to remain aware of possible biases and influences that make it difficult for the most vulnerable among the population to attend their services. They need to ensure they are truly accessible to women, children, the elderly, those affected by disability and those socially or financially disadvantaged. In general, EMTs are expected to provide care for free to those affected. Exceptions regarding national health system practices may be relevant, but all EMTs must ensure that lack of money is not a barrier to accessing health care at the EMT. Teams are also expected to provide timely care, avoiding harmful delays.

Protection of the vulnerable requires policies and practices to be applied in all EMTs throughout the stages of preparation and response. This ensures that EMT facilities remain a safe and accessible place for all, especially those most in need of protection.

[114] World Health Assembly WHA 72.6. Agenda Item 12.5 Global action on patient safety https://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_R6-en.pdf

ETHICAL CARE

EMTs and their staff commit to always behave ethically and in accordance with the World Medical Association Medical Ethics[115] manual and national policies. In particular, EMTs undertake to respect that patients have the right to be informed about their medical condition, prognosis, treatment options and alternatives and complications in a language and manner which they understand.

Informed consent is obtained for medical procedures unless obviously impossible. Ethical conduct also requires careful documentation, patient records and confidentiality of patient data.

EMTs face ethically challenging situations daily and need to prepare their staff with specific ethics training, such as through case studies and discussions using disaster and emergency challenges. Teams should have mechanisms in place, such as a field-based ethics committee to discuss and agree on difficult patient care issues, and involve the patient, family and local leaders as appropriate.

ACCOUNTABLE RESPONSE

Accountability[116] in the context of EMTs is defined as being accountable primarily to those people or communities which EMTs and their staff are providing care. Being accountable to crisis-affected people helps organizations to develop quality programmes that meet those people's needs, and reduces the possibility of mistakes, abuse and corruption.

Throughout the response, EMTs need to reach out to the community they serve to check that their services are appropriate, perceived positively and are meeting the needs and expectations of the host community. Both anonymous and direct feedback channels should be available and to encourage this, the team needs to demonstrate to patients and the community that any comments or complaints will be dealt with professionally and in a transparent, caring manner and effect change.

EMTs are deployed to be a surge support to the local health-care system upon request by the local or national government, and as such are accountable to them, as well as to the organization or country they represent.

COORDINATED RESPONSE

EMTs respond either as national (local) or international teams and must undertake to work in coordination with the existing health system and health Emergency Operations Centres (EOC) or incident management system equivalent. They must collaborate across levels of the national health system and work in support of local health providers.

Teams undertake to comply with applicable licensing and registration laws, and the requirements on reporting to the emergency coordination mechanism. In return, EMTs should expect assistance from relevant authorities to be well coordinated with each other, existing health systems and public health surveillance, through well run coordination centres and meetings, and receive timely operational updates from authorities. EMTs also undertake to coordinate with their fellow actors (health and non-health, national and international responders) for the benefit of the affected population.

EMTs work towards providing care that is integrated and coordinated across different levels and providers, ensuring continuity of care upon discharge or referral of a patient or when their deployment is over.

[115] World Medical Association Medical Ethics – https://www.wma.net/what-we-do/education/medical-ethics-manual/

[116] A Red Cross and Red Crescent Guide to Community Engagement and Accountability (CEA) – Improving communication, engagement and accountability in all we do; https://media.ifrc.org/ifrc/wp-content/uploads/sites/5/2017/12/IFRC-CEA-GUIDE-0612-LR.pdf

Annex 4.
Core standards checklist

This annex presents a checklist describing the core standards and the key priority areas that compose them. It is meant to guide teams in self-assessing and developing their structures and processes to better comply with the core standards.

ADMINISTRATION AND ORGANIZATIONAL MANAGEMENT

Descriptor	
Governments and organizations that deploy EMTs must have an administration and management system in place to ensure the policies, strategy and leadership of their organization is set up in such a way as to be able to form, finance and safely deploy an EMT within the time frames they have declared.	
Key areas	**Status (Y/N)**
Policies and documentation **1.** Central repository of documents, policies and SOPs or an operational manual accessible to team members that cover aspects of the guiding principles, standards and technical SOPs applicable to their type and size.	Y N
Organizational leadership **2.** Clear leadership structures to manage strategy and organizational stewardship and to decide on deployment in the shortest possible time frame during emergencies.	Y N
Finance and fundraising **3.** Financial structures and governance in place for maintenance of EMT capacity in an ongoing state of readiness, as well as rapid access to funds to deploy within the time frames the team has declared.	Y N
4. Fundraising in accordance with agreed ethical standards that does not inappropriately use patients or clinical images.	Y N
Risk management, safety and security (at institutional level) **5.** Strategies and systems to ensure deployments are preceded by planning and risk assessment and that risk management, safety and security policies and procedures are followed prior to and throughout EMT deployments.	Y N
Remote support for deployed teams **6.** The ability to support teams while deployed, through headquarters or other forms of remote support, including the management of resupply of staff and consumables as required and withdrawal and evacuations.	Y N
Support to team members and their families **7.** Mechanisms for families of team members to pass information to their deployed family member and obtaining relevant updates.	Y N
External liaison, media and communications **8.** Policies, procedures and designated staff managing external liaison with relevant ministries, other organizations and the media.	Y N
Organizational learning and after action reviews **9.** The organization learns from its prior deployments and systematically reviews its activities to improve future operations.	Y N
10. The organization contributes to a response-wide after action review when required to support net work-wide research and knowledge building after responses.	Y N

HUMAN RESOURCES

Descriptor	
Human resources (HR) make up the most valuable part of any EMT. A HR management system must be in place for an EMT to be operational and to ensure appropriate duty of care to its members. In the phases of pre-deployment, EMTs must have policies and procedures on deployment and post-deployment regarding such matters as staff recruitment, health screening and insurance. Team members should be asked to sign and respect a code of conduct. Policies on remuneration (or lack thereof), insurance (or equivalent) and indemnity cover for deployment should be clearly explained in the recruitment phase.	
Key areas	**Status (Y/N)**
Pre-deployment preparedness **Recruitment, selection and health clearance** **11.** Comprehensive recruitment, selection and screening process for EMT members, including physical and mental health checks to ensure fitness and suitability to deploy.	Y N
Child protection checks **12.** Screening in place to ensure those with criminal records, or who pose a threat to those requiring protection, are screened out of the organization.	Y N
13. Policies and procedures to certify that local staff can be hired or contracted if required and screened for the purposes of risk protection.	Y N
Health preparedness **14.** Provide or ensure access to all relevant pre-deployment vaccinations, guaranteeing that team members will have completed full courses of and received any appropriate boosters prior to deployment to achieve full efficacy before reaching the field.	Y N
Register database and roster management **15.** Comprehensive HR management system that considers the correct numbers and types of staff required to deploy the team in a timely manner, and with adequate skill mix (both clinically and related to deployment experience).	Y N
16. HR database or equivalent that can maintain confidentiality but still provide all the required details for team selection and deployment, including access after-hours and during emergencies.	Y N
17. A plan to rotate staff to guarantee experience and mentorship is provided to the next generation of responders while ensuring to minimize impact on quality and safety of care.	Y N
18. Consider applying the rule of 1 : 5 ratio for number of team members per function in the roster, except for specialist care functions.	Y N
On deployment **Health, safety and well-being** **19.** Chemoprophylaxis and personal protection from vectors according to context and risk assessment are available, such as bed nets and malaria prophylaxis in endemic regions.	Y N
20. Access to safe water, food and adequate rest areas to ensure staff remain healthy throughout their deployment and in best possible fitness to carry out their duties.	Y N
21. In field psychosocial support available to team members, either through peer-to-peer support (with appropriate training and monitoring) or through professionally trained personnel.	Y N
22. Appropriate PPE for the designated work (such as standard precaution PPE for clinical staff or appropriate protection for those handling waste) are provided for team members and local hired staff.	Y N
23. Arrangements in place for the care of team members' health and safety in the field, necessary insurances or compensation (medical, accident and life) relevant for the deployment context and include evacuation and exit strategies if required.	Y N
Post-deployment **Health post-deployment** **24.** Team members are provided with the opportunity for debriefing, psychosocial support and clearance before being redeployed after an appropriate rest phase and medical follow up if needed.	Y N
25. Team feedback at the post-deployment operational debrief should be used as an opportunity to review and improve team policies and training.	Y N

PROFESSIONAL LICENSING AND CONDUCT

Descriptor

Staff should work within their area of expertise for which they are professionally recognized. EMT staff adhere to professional guidelines and the highest ethical and professional standards of conduct and performance. EMTs have mechanisms to deal with patient complaints and allegations of malpractice.

Key areas	Status (Y/N)
Professional registration, licensing and credentialing	
26. All staff are registered to practice in their home country and have current licences for the tasks they are assigned.	Y N
27. Team members who do not require formal licensing, such as operational support staff, should be trained in the duties they perform and have the appropriate seniority and experience for their roles.	Y N
Scope of practice	
28. Team leaders and the EMT organization should know the scope of practice of their staff and ensure adequate skill mix in teams to prevent clinicians being placed in difficult ethical decisions where they are treating patients requiring procedures not within their skills range.	Y N
29. There is a balance between strict scope of practice rules during elective work in non-emergencies and the context of an emergency. Illustrative examples include surgeons preferably being generalists, not subspecialized, and with the ability to manage patients with a range of trauma and non-trauma surgical issues. Equally, surgeons should either have experience in caesarean section and be allowed to perform the procedure under emergency settings in their own country, or the team brings a fully licenced obstetrician.	Y N
30. Those in specialties that are not recognized/licenced in all countries, such as paramedics, should work within their scope of practice in their home country and be under the supervision of a clinical person recognized by the host country.	Y N
Complaints handling	
31. EMTs inform patients in an accessible language about their right to complain or make suggestions in written or verbal form.	Y N
32. Complaints are handled and investigated in a respectful and timely manner and whenever possible feedback should be provided to the complainant.	Y N
33. Concerns of patients or families are managed in an appropriate manner.	Y N
Patients experience and feedback	
34. Appropriate channels in place to gain feedback on perception of services provided from individuals, the community, local health colleagues and the coordination mechanisms (for example EMTCC).	Y N
35. Professional insurance, indemnity and issues of malpractice Team and individual members are covered by adequate medical indemnity insurance that includes working in emergency response settings for national and international teams.	Y N
Culture of safety	
36. A strong and positive patient safety culture where risks to breaches in clinical standards and threats to patient safety are identified early and properly addressed with critical incidents brought forward by staff.	Y N

TRAINING OF TEAMS

Descriptor

EMTs ensure that all team members are appropriately trained for deployment. This should be clearly articulated in a training framework that outlines a team member's progressive development and include a number of streams according to skill set required. Basic induction training for all must cover (but is not limited to) safety and security, team protocols and procedures, and familiarization with team equipment. Further training in specialist skill set attainment, adaption to deployment context and all of team operational simulation then follows.

EMTs should also ensure a system of identifying talent with leadership potential and provide mentoring for them to increase their roles and responsibilities. This leadership programme should be open to identified individuals from any stream.

Key areas	Status (Y/N)
Training framework and learning pathways	
37. Method to check the validity of training already done by EMT members, particularly related to their original qualifications and credentials (see also core standard on professional conduct).	Y N
38. Comprehensive training framework understandable by all members, including the opportunity for them to create their own learning pathway to improve their knowledge and professionalism.	Y N
Training curriculum, content and learning objectives	
39. Training curriculum, content and learning objectives are suitable for preparing team members for deployment with the EMT to national and if applicable international emergency responses.	Y N
40. Learning objectives are available to team members and to external reviewers of the training. All courses should be regularly reviewed with participant feedback and following lessons learnt from deployments.	Y N
41. EMTs may choose to conduct training within their organization or in collaboration with other providers, external facilitators or outsourced, but all must contribute to the content.	Y N
Operational training and simulations	
42. Just-in-time training for specific missions, especially in situations where more time is available (such as for outbreak response and second rotations of teams).	Y N
43. Learning framework that includes just-in-time training and functional, full-scale exercises.	Y N

COORDINATION OF EMTS

Descriptor

EMTs agree to monitor the national, and if relevant, regional and global situation during acute emergencies. They agree to accept initial impact assessments by relevant local authorities and to offer and/or respond to requests for assistance in a timely manner.

Key areas	Status (Y/N)
Activation mechanisms	
44. National EMTs have mechanisms to be activated by national authorities through the health Emergency Operating Centre (EOC) or similar mechanism.	Y N
45. National Disaster Management and Emergency Health Preparedness and Response Plans and SOPs include provisions for deploying national response teams such as EMTs.	Y N
46. International EMTs have mechanisms to monitor and contribute to the Virtual On-Site Operations Coordination Centre (VOSOCC) or other regional or global coordination tools relevant to EMTs.	Y N
47. EMTs undertake to only deploy if accepted by the affected local or national authority. Bilateral mechanisms to offer assistance to an affected country are all recognized and valued pathways. WHO works with countries to strengthen and support their ability to make their own impact assessments, deploy their own response teams, and if necessary, accept offers of specific types of EMT to fill any remaining gaps.	Y N
Registration on arrival	
48. National EMTs arriving in an affected area undertake to register with the relevant incident command onsite and work in coordination with local authorities and relevant agencies.	Y N
49. International EMTs undertake to report on arrival their type, capacity and services based on the EMT classification system.	Y N
50. EMTs, undertake to register with the ministry of health and obtain an authorization to practice for each health professional (or equivalent licensing procedure).	Y N
51. EMTs have evidence of relevant documentation including required licences and certificates of clinical staff in both digital and hard copy form.	Y N
Field coordination	
52. EMTs agree to coordinate with local and national authorities including the decision on tasking to assigned location.	Y N
53. EMTs agree to contribute and take part in coordination meetings throughout their deployment, sharing of information and reassessment of needs as situations evolve at either local and or national level.	Y N
Reporting on exit	
54. EMTs agree to complete the necessary exit reports before departing the area of operation to con firm their contributions are captured and most importantly to ensure continuation of care.	Y N

TEAM FIELD MANAGEMENT AND OPERATIONS

Descriptor

EMTs deploy with strong internal operational capacity and leadership. Teams without strong field management and operations capacities will not be able to function optimally in the acute post-disaster phase or outbreak and may endanger their own staff, as well as fail to maintain standards of care to the affected population. EMT agencies deploying teams owe their staff a duty of care[117] in relation to their health and safety at work and provide staff the appropriate equipment and in field supplies and support to maintain this.

Key areas	Status (Y/N)
Safety and security risk management	
55. Risk management starting with headquarters support and continuing throughout the field deployment phase, including local security plans and procedures. This should be led by an identified security focal point within the team.	Y N
56. EMTs have a range of security approaches, but all should include liaison with local authorities, arrangements to receive security updates and plans in place for fast changing security threats.	Y N
Critical incident management	Y N
57. Critical incident management system with the ability to activate local and remote support.	Y N
58. Plans for the most likely critical incidents, including but not limited to injury, illness or death of staff.	Y N
59. Systems in place to support team members and relatives.	
Daily operations management	Y N
60. Team management involves the critical aspects of clinical/nursing, logistics, WASH and administrative support.	Y N
61. Field management includes local contracting and the hiring of local staff, such as general operational support staff, translators and security, as relevant.	
Processes to integrate into an existing health facility	Y N
62. Clear communication with facility prior to deployment as timely as possible.	Y N
63. Access to facility documentation that is relevant for patient care and staff safety.	Y N
64. Medical, ethical and overall work culture is understood and respected.	
Public information management	Y N
65. Management of media at headquarters and in the field. This includes methods to protect patient and family confidentiality and ensure non-pressured and informed consent before patients or staff speak to the media.	Y N
66. Designated media spokespeople with specific training for the role.	Y N
67. Policies to manage social media and other communication of team members before, during and after their deployment. This includes, but is not limited to, the use of photographs and video footage after obtaining consent for public use.	

[117] Duty of care – the organization must reasonably protect the welfare of the volunteers it deploys. Duty of Care refers to the moral and legal obligations of employers to their employees, contractors, volunteers and related family members in maintaining their well-being, security and safety when working, posted on international assignments or working in remote areas of their home country. In those circumstances, individuals and organizations have legal obligations to act prudently to avoid the risk of reasonable, foreseeable injury or exposures leading to ill health. This obligation may apply both to acts and omissions. In addition to that, the employers are due to build a broad culture within their organization addressing the health, safety, security and well-being of their employees and other related collaborators to the business. To do so, they are expected to develop and deploy appropriate travel risk management approaches to protect people from possible harm. (https://www.internationalsos.com/duty-of-care)

RECORDS AND REPORTING

Descriptor

EMTs must uphold a level of medical information management that contributes to better patient care and to the overall health response. This includes clinically accurate, relevant and legible patient records, submission of a daily summary of the team's clinical activity to the appropriate health authorities, and a surveillance and reporting system that can be used to drive a better public health response.

Key areas	Status (Y/N)
Patient records	
68. EMTs keep confidential patient records of assessment, interventions, clinical monitoring and possible complications. Patient records should capture enough information to contribute to the EMT Minimum Data Set (MDS) or equivalent.	Y N
69. Every patient is offered a record of treatment performed and has a referral for follow up, planned as needed.	Y N
70. Clinical forms and consent papers are written in a language understood by local people, or a summary translated into local language.	Y N
71. Data management protection to ensure effective backup processes and methodologies are in place to maintain data integrity.	Y N
Reporting and MDS	
72. EMTs report at regular intervals during response and prior to demobilization to local and national authorities, using national reporting agreed formats, including the EMT MDS or equivalent. These reports of activity should be used to decide on adequate coverage and contribute to a coordinated response.	Y N
Research and academic papers	
73. Research or trials are not conducted by an EMT or its members during field deployments without the express consent of the patients involved and appropriate ethical board approval.	Y N
74. Academic papers and articles using information taken from national health services are not published nor presented by an EMT or its members without the consent of relevant authorities and peers. Ideally all publications should be joint, or nationally led.	Y N
75. EMTs are encouraged to conduct after action reviews after each deployment to inform necessary adjustments and foster continuous improvements.	Y N
Incident reporting system	
76. Method for reporting near misses, non-harmful incidents and adverse events focused on learning and improvement of an EMT's systems.[118]	Y N

[118] The following operational definitions are used in the standard:(1) Patient safety incident: an event or circumstance which could have resulted, or did result, in unnecessary harm to a patient. (2) Near miss: an incident which did not reach the patient. (3) No harm incident: an incident which reached a patient, but no discernible harm resulted. (4) Adverse event: an incident which resulted in harm to a patient. Reference: WHO. Conceptual Framework for the International Classification for Patient Safety. Geneva: WHO; 2009. Available at https://apps.who.int/iris/bitstream/handle/10665/70882/WHO_IER_PSP_2010.2_eng.pdf;jsessionid=02A1536A798C37E164B3E7DCE61E7763?sequence=1

SUPPORT TO THE WIDER PUBLIC HEALTH REPSONSE

Descriptor

Clinical care is one important pillar of a wider public health response. EMTs must ensure they contribute to the overall response, their practices do no harm, risk of infection is minimized, and they help to prevent disease outbreaks and worsening public health situations. They do so through public health messaging, community engagement and acting as a sentinel reporting site for surveillance. All EMTs are expected to be able to manage communicable and noncommunicable disease presentations, while specialized care teams may be required for specific outbreaks.

Key areas	Status (Y/N)
Surveillance and disease early warning	
77. Daily reporting or as required by the health authorities via either the EMT MDS or locally used disease early warning system.	Y N
78. Increase surveillance and protection of team members based on public health threats.	Y N
79. Compliance with minimum standards for infection prevention and control (IPC) including adequate PPE for staff, and effective hygiene practices throughout the facility. IPC should also be supported through adequate access to water and sanitation, sterilization and through monitoring the rates of postoperative infections at a facility.	Y N
Public health messaging	
80. Contribute to the prevention of disease through community engagement and public health messaging to the population presenting at EMT facilities.	Y N
81. Public health messages may be generic in nature, adapted for the context of the emergency, be in the local language and delivered in culturally appropriate ways.	Y N
82. Specific and increased standards of community engagement are expected in teams responding to specific outbreaks.	Y N
Wider health needs	
83. While EMTs are not expected to manage all aspects of nutrition, WASH and vector control they should report signs of such needs in the community they serve (through the EMT MDS) and coordinate with the appropriate health authorities and other response agencies to advocate for these services or interventions to be supported.	Y N

SUPPORT TO NATIONAL AND LOCAL CLINICAL SYSTEM AND PATIENT REFERRAL

Descriptor

A primary function EMTs deploying in emergencies is to support the national health system. EMTs should expect to be deployed to fill gaps in the local health response either through loss of pre-existing facilities through damage, or due to overwhelming demand requiring a surge in resources. EMTs act within a "hub and spoke" model on which most health systems are built. They accept health liaison officers from local clinical services to act as advisers on the health referral system. Teams ensure they know how and where to refer patients that require care beyond their capacity or capability and accept patients from other facilities and teams as required.

Key areas	Status (Y/N)
Patient referral pathways	
84. Patients requiring medical escort are generally the responsibility of the referring facility or EMT until handover either to a designated ambulance service or the receiving team.	Y N
85. Understanding of the local patient referral system for continuity of noncommunicable disease care, reproductive health care and for long-term communicable disease programmes such as TB and HIV.	Y N
Documentation	
86. Patients are referred with records and referral forms as agreed by the health authorities or using the WHO referral form if no national form exists.	Y N
Mass casualty management	
87. EMT have a mass casualty management plan and are prepared for secondary events such as aftershocks, or for other natural or man-made incidents such as road or air traffic accidents.	Y N
88. Depending on their type, EMTs must be able to contribute to initial triage, stabilization and appropriate referral and/or definitive treatment of victims of mass casualty incidents.	Y N

SELF SUFFICIENCY

Descriptor

EMTs need to have the ability to be completely self-sufficient for a period of time to ensure they do not become a burden on local resources, authorities or other responders. The length of time varies depending on the context of the team.

Teams not deploying in the first phase of a response, those deploying as specialized care teams into existing facilities or similar EMTs need to ensure self-sufficiency and may consider local arrangements.

Key areas	Status (Y/N)
Aspects of self-sufficiency	
89. Clinical aspects: medical supplies, equipment and consumables.	Y N
90. Logistic aspects: power generation, communications, food, shelters, tools and other equipment to maintain team health, welfare and minimum operational support function as per the EMT typology.	Y N
91. WASH aspects: water treatment, production and distribution, sanitation, health-care waste management, environmental cleaning and hygiene facilities equipment and consumables.	Y N
Length of self-sufficiency	
92. National teams generally require fewer days of self-sufficiency on the presumption that resupply is more accessible from national resources. This allows them to deploy fast and light, but they still require a minimum of three days depending on the degree of isolation.	Y N
93. Some countries may choose to set longer requirements for national teams depending on several influencing factors such as geography, the terrain, size of the country and population density, to name few.	Y N
94. International EMTs require a minimum self-sufficiency period of at least 14 days with a resupply mechanism in place.	Y N
95. Exceptions of full self-sufficiency include raw water (although teams must deploy with sufficient potable water for team health for the first 48–72 hours), oxygen tank refilling, fuel (which needs to be accessed locally) and heavy transport vehicles/trucks.	Y N
Staff	
96. Self-sufficiency of staffing is required, especially by international teams deploying in the first phase of a response. While hiring of local staff may be possible, teams must ensure that such recruitment does not undermine the ability of the local health system to respond.	Y N

Annex 5.
Types of specialized care teams[119]

SPECIALIZED CARE TEAMS (OUTBREAK/HIGHLY INFECTIOUS DISEASES)

Outbreak: diarrheal disease (including cholera, shigella and other diarrheal outbreaks)

EMTs with the capability to support existing local health facilities in the set-up and running of a dedicated Diarrheal Treatment Centre (DTC) or ward. Teams require the staff, medical equipment and supplies to support the adaption or augmentation of existing ward space within a hospital to run a DTC.
Module adaption:

- Smaller diarrheal treatment specialist teams may be appropriate for the setup of oral rehydration centres or stations as outpatient centres.
- Teams may be required to bring extra physical ward space to house larger DTCs. Teams with this capacity are termed diarrheal treatment specialist teams with facilities. They may deploy either as an adjunct to support an existing facility or can set up a full DTC next to or even removed from an existing health facility.

Note: Cholera treatment centres and oral rehydration stations during cholera outbreaks that deliver direct care to the local population are required to meet the normal requirements of medical care in that country, the core principles and standards of EMT as well as the technical standards of an outbreak specialist team. Work by the WHO Global Task Force on Cholera Control[120] provide a highly valuable template for the setup and response of other forms of DTCs.

Outbreak: viral haemorrhagic fever

EMTs deploying as viral haemorrhagic fever (VHF) teams require specialist skills and strong logistics and operations support to deliver care to patients affected by these highly infectious group of diseases, including Ebola virus disease, Marburg virus disease and Lassa fever. Teams may attempt to adapt existing health facilities into safe treatment centres for this group of diseases, but lessons from recent responses have shown it is often faster and safer for staff and patients, for care to be delivered adjacent to health-care facilities in units specifically designed for the care of VHF patients, either in temporary or permanent structures. Teams that provide both the facility and the team are termed "VHF treatment specialist teams with facilities".

Outbreak: vector-borne disease

While the care for outbreaks of vector-borne diseases is generally supportive (such as for dengue, yellow fever, Zika) there has been a recent need for responses by national and international EMTs to assist during surges in demand for care. Occasionally EMTs will need to provide extra physical space for care of large numbers of suspected or confirmed cases of a vector-borne disease outbreak and be termed a "vector-borne disease specialist team with facility". More often, the care of patients during an outbreak of vector-borne disease can be supported by a specialist EMT within existing health structures, but with assistance by improved triage and streaming of relatively well patients to their home and unwell patients into the facility, allowing preservation of access to other life-saving medical services beyond the outbreak response. EMTs responding in outbreaks of vector-borne disease must, in addition to bringing supplies for the extra supportive care required, bring logistics and operations support staff control at the health facility. Failure to adequately support this element of response will mean the treatment centre becomes an amplification centre for infecting more vectors.

[119] For all Technical Working Group documents, please refer to the EMT Knowledge Hub: https://extranet.who.int/emt/guidelines-and-publications#_

[120] https://www.who.int/cholera/task_force/GTFCC-Case-Management.pdf?ua=1

Outbreak: respiratory infection

EMTs responding to respiratory outbreaks should prepare for two major forms of respiratory illness.

- Flu-like illness (highly infectious, medium to low mortality).
  In this case EMTs will be expected to provide supportive care including mass delivery of supplementary oxygen, large volume flu centres for supportive care, and the use of natural ventilation and bed spacing along with staff PPE to limit staff exposure. It is highly unlikely that a large scale international EMT response will be seen in a true flu outbreak, epidemic or pandemic, but national EMTs will be the frontline of any response, ideally working from large purpose-built or adapted non-health facilities such as sports halls and warehouses for the care of potentially millions of affected patients.
- SARS-like illness (highly infectious, with severe symptoms and high mortality).
  In cases of SARS-like outbreaks it is also likely that EMTs will be called to respond to either bolster existing health facilities or create new expansion wards, or even dedicated health facilities for the care of these patients. In addition, a more invasive care may be offered depending on the context and numbers of affected patients, such as intubation and ventilation. International teams might also support clinical management and IPC processes as currently experienced in the SARS-CoV-2 pandemic.

Outbreak: burial team

Properly termed a specialized support team rather than a specialized care team, these teams are vital during responses to highly infectious pathogens such as Ebola and cholera, which can be transmitted by dead bodies. These teams require excellent training in both technical handling of the dead, but also in negotiation, community engagement and risk communication to allow them to complete their difficult tasks. As with all forms of outbreak response teams, they require excellent logistics and operations support for both the supplies involved in each burial and PPE, but also a system of cleaning their vehicles and ensuring safety at all times for staff and family members.

Outbreak: vaccination team

Vaccination teams may be created by EMT organizations, especially national ministries of health, to deliver large volumes of vaccine in short periods of time for potential or confirmed outbreaks. EMT organizations delivering such support must have the permission of local authorities to support the operation and must have the required logistics and operations support capacity to manage both the required storage and delivery of the vaccine, for example, complete cold chain provision. EMTs need to ensure organization of a vaccine campaign involving excellent community engagement, public acceptance, and the logistics of organizing the correct number of mobilizers and vaccination teams to conduct the campaign. The operations support system needs to be able to safely deal with waste, particularly hazardous sharps waste. Vaccination teams directly delivering the vaccine must have the required training and permissions/licences locally to deliver this form of care intervention.

Outbreak: infection control team (IPC)

EMTs may be deployed during outbreaks to bolster infection prevention and control measures within existing health facilities in an outbreak area. These teams are EMTs when they are health-care professionals (multidisciplinary, along with excellent logistics and operations support elements) deployed to support the embedding of IPC practice within the continuum of care of a health facility. IPC interventions that involve a short visit without follow up and long-term mentoring and supplies are unlikely to change practice, even in the short-term during an outbreak.

Instead EMTs embedded with health facilities for multiple weeks or months, with doctors and nurses actively supporting local staff in PPE, triage, identification of risk and improving IPC on a daily basis will make a difference to nosocomial infection rates, the halting of a particular outbreak, and leave a lasting legacy.

EMTs must have strong logistics to supply IPC equipment and PPE, as well as operations support to improve access to such necessities as water and hand-washing stations within the facility. EMTs involved in this form of response, often to health-care facilities not designated as "treatment centres" during an outbreak, may arguably save more lives by ensuring a decrease of nosocomial infections, a restoration of faith in the health-care system and the continuity of health care such as access to maternal and child health services and noncommunicable disease care which are often halted during outbreaks.

Specialized care teams (surgical)

All surgical teams should consider inpatient care wards the responsibility of the host facility, as is the provision of power, clean water, sterilization services, transfusion and oxygen supply. It is mandatory that all surgical specialist teams deploying in support of a facility or other EMT, check with that receiving team the status of each of these important areas, and if in doubt carry redundancy measures or alternate supplies to ensure the lack of these measures does not compromise patient safety. At a minimum, all surgical teams must bring at least one specialist surgeon in their area of expertise, and one anaesthetist per surgeon. They must bring at least three nurses per surgeon in the team to cover not just operative management but also be able to advise on pre- and post-operative nursing care. They must bring at least one logistician and be responsible for their own team care as well as the equipment and services described above.

Burns care

Burns specialist teams deployed during mass casualties and disasters involving large numbers of burns patients are described in the document of the technical working group on burns.[121]

There are two major forms of burns specialist care teams.

- Burns rapid response teams
  These local teams are designed to deploy rapidly (with 6–12 hours) from the national burns specialist centre out to a district hospital or similar facility that has received mass casualty burns patients. This form of burns specialist EMT serve the function of assisting definitive triage (after scrubbing of patients and appropriate dressings). The EMT is involved in decision-making on the distribution of patients, whether they go to the national burns centre, to other centres or even international burns centres in the region, or remain at the current level of care with minor injuries or receive palliative care and support from their families.
- Burns specialist teams
  These larger EMTs are multidisciplinary teams deployed for considerable periods to support existing burns specialist units and other hospitals (including Type 2 or 3) in the event of a mass casualty burns incident resulting in large numbers of severe burns patients. This team serves to support the local burns team or surgical teams in caring for patients for extended periods of time, including supporting appropriate surgical interventions, anaesthetists with burns experience, nursing care and specialist burns rehabilitation along with logistics support.

[121] https://www.sciencedirect.com/science/article/pii/S0305417920304599?via%3Dihub

Orthoplastic and reconstructive surgery

These surgical specialist EMTs are ideal to deploy into existing facilities, or to bolster existing types 2 or 3 with a comprehensive approach to the orthopaedic, plastic and reconstructive surgery needs of patients after emergencies involving large numbers of traumatic injuries. They must have appropriate orthopaedic and plastic surgery specialists, anaesthetists and specialist nurses along with rehabilitation experts able to support the splinting and mobilization of these complex injuries. These teams must be willing to engage for an extensive period of time given the complexity of care, the numbers of operations and reoperations and the need for long-term rehabilitation and specialist nursing care.

General surgical care

EMTs that provide general surgical care services in emergencies, especially sudden onset disasters, should also include surgeons with experience in wound care and orthopaedics. They should be able to deploy in the shortest possible time and will become less needed after 7–10 days. Like all surgical teams, these specialist care teams will be embedded inside existing facilities or support other type 2 or 3 teams, but must bring the anaesthesiologist, nursing and rehabilitation specialist, and enough supplies and logistics support for the numbers of operative procedures they are declaring as their capability. In general, teams should not deploy for less than two weeks and aim to deliver at least seven major or 15 minor (or a combination of both) surgeries per day for the duration of their stay.

Ophthalmology care

EMTs that provide ophthalmic services during emergencies usually do so within existing structures or in agreement with other EMTs. Ophthalmic care can extend beyond surgical care to also include the supply of assistive devices such as lost visual aids/glasses. They must provide the required specialist team and all equipment and consumables for the number of interventions they are declaring to the local authorities.

Neurosurgical care

EMTs specialist teams delivering neurosurgical care should only be deployed into facilities with intensive care and Type 3. As with other surgical teams they must bring anaesthetists and nurses expert in this field to support neurosurgical colleagues.

Maxillofacial care

EMTs specializing in maxillofacial surgical care must comply with all the requirements of other surgical teams but can expect to deploy several days after an event rather than at the beginning and remain for a longer period of time. They should supply all specialist equipment required for their intervention and be clear on the number of interventions and capability they are offering the local authority.

SPECIALIZED CARE TEAMS (REHABILITATION)

Rehabilitation care

Rehabilitation services are often lacking in low- and middle-income settings, and many emergencies create a massive surge of unmet need. While all Type 2 and 3 teams must include a rehabilitation service, rehabilitation specialized care teams can bolster this capacity, or deploy into existing local health facilities and rehabilitation centres if they exist. EMTs are referred to the document produced by the rehabilitation working group[118] for full details of this form of specialist care team. Rehabilitation services are, by nature, lengthy and teams should plan to deploy for at least four weeks.

Spinal care

EMTs with specialist spinal care capacity can play a vital role in supporting the care of spinal fractured and spinal cord injured patients after emergencies resulting in major trauma such as earthquakes. Generally, teams will be required in the first week of an event and stay for an extended period of time. Teams will generally deploy into existing spinal specialist centres if available, or large referral hospitals or Type 3. They may also be useful in advising other surrounding local hospitals and EMTs on standards of care for spinal injured patients during the emergency response.

SPECIALIZED CARE TEAMS (MENTAL HEALTH)

Mental health and psychosocial support

In general, national EMTs with specific specialist training in these forms of interventions will be best in serving the local population. If national teams are unavailable or overwhelmed, then international EMTs may play a role but should be cautious in direct delivery of intervention. They may consider joint interventions with local professionals to ensure appropriate adaptation to local language, context and culture and delivered by locals with support from the international team.

SPECIALIZED CARE TEAMS (REPRODUCTIVE, MATERNAL, NEWBORN AND CHILD HEALTH CARE)

Maternal and newborn health

EMTs wishing to meet the minimum standards of this specialized care team are referred to the reproductive, maternal, newborn and child health care working group document. Maternal and newborn specialist care EMTs may be independent of or joined to child/paediatric health teams and are most valuable when deployed to support health facilities with pre-existing maternal, newborn and reproductive health services and into Type 2 or Type 3.

SPECIALIZED CARE TEAMS (INTERDISCIPLINARY)

Teams in this category may offer modules in various combinations, with or without accompanying treatment structure space and can be embedded into the existing structure of a health facility or other EMT if space allows or they may bring their own structures. They characterize the modular approach of clinical care teams, particularly seen during the deployment of national EMTs to support hospitals overwhelmed by protracted emergencies, allowing rotation of staff from other areas of the country to be deployed allowing respite for local staff.

Intensive care unit (ICU)

EMTs may offer a module encompassing an intensive care unit to bolster an existing ICU at a health facility or other EMT. It may involve the adaption of nondedicated space into an extra overflow area of intensive care, or an additional ward in a tented or other structure adjacent to the existing ICU. Teams should be able to supply medical, nursing and allied health staff and the ICU beds and consumables required and should declare to the local health authorities the number of beds they are able to manage when offering to deploy.

Paediatrics

Paediatric specialist care EMTs generally deploy to support emergencies and outbreaks involving large numbers of children and can be deployed in combination with other modules such as intensive care, maternal and newborn, or surgical teams. Teams should be made up of medical and nursing staff and allied health practitioners with specific paediatric expertise and qualifications.

They should ensure the supply of extra consumables for the care of paediatric cases according to the context of deployment, for example, trauma and outbreak. EMTs wishing to meet the minimum standards of this specialized care team are referred to the Minimum technical standards and recommendations for *Reproductive, maternal, newborn and child health care for emergency medical teams*.

Ward care teams

EMTs may be deployed to increase the bed capacity of a local health facility or Type 2 or 3. These ward care teams are generally required to bring enough logistic support to set up and run modules of ward beds, for example, 10, 20 or 30. depending on local needs and the context of the emergency. Teams should be flexible in the configuration of their ward care modules, and able to either setup tented structures or use non-traditional spaces within existing or nearby health facilities to increase bed capacity. They should ensure the increased capacity of beds comes with minimum numbers of nursing staff to cover day and night shifts. Medical staff should be offered in small numbers, for example, 1–2 generalist internal medicine staff, supplemented with other specialties depending on the emergency context. They should ensure that WASH facilities according to EMT standards are provided for these additional beds and that the host facility can supply the extra required food and water, or that the EMT brings this extra capacity with them.

Inpatient nutrition care

EMTs with specialist experience in delivering inpatient care to those with severe acute malnutrition may be required in emergency responses. This specialty service may be provided in existing health facilities or within Type 2 and 3. These specialist teams must have paediatric medical and nursing staff and nutritionists. They must be able to supply, directly or in partnership with other agencies, the specialist consumables for this form of specialist care, such as specialist nutrition and micronutrient supplements. The EMT should be able to recognize and treat specific malnutrition syndromes and complications of re-feeding and infectious disease complications commonly found in this vulnerable population. Teams in general should offer a deployment for an extensive period of time given the complexity and protracted nature of this type of care.

Dialysis

EMTs wishing to provide a specialist module for dialysis care should be able to declare to the local authorities how many dialysis patients or dialysis interventions per day they can perform. They should be made up of at least two nephrologists and four nephrology nurses as well as logistics staff and be able to support with dialysis machines and the required consumables and dialysate for the number of patients they have declared to support for at least two weeks. Dialysis teams may also consider other forms of temporizing renal replacement therapies that can be delivered safely in an emergency affected population, such as peritoneal dialysis. Dialysis teams should in general be embedded within existing health-care facilities that previously offered dialysis, or have intensive care units, and within a Type 3. Dialysis EMTs would ideally have pre-existing activation protocols and existing memorandums of understanding with other EMTs to deploy rapidly, for example, after an earthquake to assist with treatment of crush syndrome, and in areas with high rates of renal failure and temporary loss of renal dialysis services, such as in island nation states after hurricanes and cyclones.

Chemical and radio-nuclear: treatment and clinical management

EMTs may be called upon to provide specialist care teams to treat the sequalae of exposure of a population to chemical or radio-nuclear emergencies both accidental and deliberate. EMTs may be asked to operate within the warm or cold zone areas, after initial decontamination has been completed. These specialist care teams require specific training in secondary decontamination, the use of appropriate PPE, and the rapid set up and management of temporary field structures supporting affected health facilities. These facilities may mimic Type 1, 2 and 3 facilities and be used for the following:

- outpatient care of those least affected who can be offered basic first aid and discharged with advice on when to seek further care;
- inpatient care for moderate effects of exposure and or emergency surgery for treatment of mild burns and other complications; and
- referral-level care for complex or intensive care and the management of more extensive burns or other complications.

Note: This type of response is complex and requires specially trained teams of medical, nursing, paramedic and logistics staff. National, regional and international teams are encouraged to consider the emerging needs and prepare adequately before response.

Specialized care teams (interhospital)

EMTs with specialist capacity to support local prehospital services are now emerging. These teams add most value in the areas of direct on road ambulance/prehospital transport crews, often with access to emergency ambulance vehicles, aircraft or boats depending on context. Teams should model themselves on Type 1 mobile teams, with a base of operations to deliver staff care and resupply, and several roving crews or teams that can work on a variety of transport platforms to offer prehospital care. Teams should be made up of prehospital trained doctors, nurses and/or paramedics and must have a minimum of two doctors within the team to offer oversight to response teams and to comply with licensing and medication laws in countries without an existing prehospital paramedic registration system. Teams should be able to provide prehospital retrieval bags and medical consumables for the resuscitation and transport of critically ill patients and the required stretchers and transport devices required to safely use nondedicated vehicles, meaning vehicles other than ambulances, in patient care.

Prehospital EMTs may also consider a module of prehospital coordination that can support and supplement existing or absent local prehospital coordination services. These teams should only work under the local health authorities if accepted and not be independent of them in this coordination function.

Transport, retrieval and medevac

EMTs with the specialist skills and equipment to support complex retrievals and medevac are increasingly important. These teams should be configured much like the prehospital teams above but should have added capability and experience for the specifics of aeromedical retrieval including long distance transport. Teams may be requested to manage specific risks such as the transport of highly infectious diseases, such as suspected and confirmed Ebola patient transfers, or for the mass transport of large numbers of patients. In each case, the team must bring any specialist equipment required to convert the airframe or other vehicle into a patient retrieval platform. They should ensure as much as possible the safety of their own team as well as securing the patient in such a way as to allow access to them by staff during transport and to allow care to continue. Some national or regional authorities and militaries may have dedicated medevac teams with their own airframe or other specialist retrieval vehicle. Medevac teams should clarify to local authorities their true capacity of retrieval per day or week, and provide the consumables required to resupply their transport bags to achieve this capacity.

SPECIALIZED TECHNICAL SUPPORT TEAMS

Patient care laboratory service and/or transfusion service

EMTs may be configured to offer a standalone or combined module of laboratory and/or transfusion services that can be used to supplement or temporarily replace damaged local laboratories or transfusion service providers, or to increase the capacity of a Type 2 or 3. They must work closely with all health care facilities and EMTs in the timely reception, processing and delivery of results of tests performed. A patient-centred approach should be maintained as in all forms of health-care service, with tests undertaken based on clinical need, and results delivered back to the patient care provider teams.

Laboratories in general emergency responses should be able to support clinical decision-making. Teams should be clear on what tests they are offering, and their capacity in terms of daily tests, with a self-sufficiency of all required reagents and machinery for at least two weeks. Transfusion service providers should reach the minimum standard described for transfusion services within a type 2 or 3.

SPECIALIZED SUPPORT TEAMS

Health-care operations support

These specialist support teams are part of the overall EMT system and are mostly made up of logistics, WASH and other technical support experts required in rapidly assessing and repairing critical support infrastructure within health facilities, such as power and water supplies, structural repairs such as roofs and walls, and other critical services, including autoclaves/sterilization, waste management and sanitation. These teams are vital to allow local health staff to return to work and deliver safe care within their own facilities. They also ensure a timely exit for national and international EMTs deployed into the area, as the sooner a health facility has restored full capacity the sooner clinical EMTs may consider down-scaling and exiting. These teams may provide additional modules to an EMT or may be deployed separately. All must still register with the local health authorities and be coordinated by them in their efforts.

EMTCC support team

EMTs may offer individuals or modules to support health authorities in the coordination of national, and if requested, international EMTs. These EMT coordination cell members should ideally have completed an EMTCC course at either national or regional level and have specialist skills in at least one of the key functions of EMTCC. The EMTCC module should be offered to support operations within the national or local health EOC.

Pharmacy and donation management

EMTs may be deployed to assist local health authorities to manage the donation of large volumes of pharmaceuticals and other forms of medical equipment and consumables. WHO, international and national standards and protocols governing the donation of medical supplies should be observed by donors. These teams may have small numbers of health advisers but should be primarily made up of pharmacists and medical logisticians. These teams should work in support of existing health authority mechanisms for the reception, storage and distribution of medical supplies and consumables. They should be specifically trained in the management of large volumes of medical and pharmacy stock, and ideally should have knowledge of a range of medical supply system IT solutions that may be used by countries in their region and be able to support interim measures to manage the information of stock if local systems have been overwhelmed.

Annex 6.
Operational support assumptions and calculations

This section provides examples and guidance on estimations for operational support based on typology.

POWER

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
Single 2 kVA petrol generator for transport to clinic site 5–10 kVA for base camp needs Ensure fuel and reserve for vehicles (mobile activity)	5–10 kVA To supply an average fixed Type 1 facility	30–50 kVA for standard-sized Type 2 without air conditioning Consider doubling for deployments requiring air conditioning	Estimate 100–200 kVA depending on air conditioning systems etc.

COMMUNICATIONS

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
Unlocked local SIM cards for non-smart phones and smart phones Low earth orbiting Iridium type satellite phone for voice satellite broadband for data connectivity and voice at base camp	Same as Type 1 mobile	Same as Type 1 mobile UHF/VHF radios walkie-talkie for internal communication on site between team members	Same as Type 2 Consider high bandwidth data connections to allow telehealth capacity.

WATER SUPPLY

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
Assumptions: Team members "hub" 40–60 litres/per person per day (ppd) Team members "field" 5 L/ppd Outpatients 5 L/ppd An additional 50 L potable water per day will provide for cleaning and sterilization if required **Calculation:** Total water requirements 1 team x 4 persons (p) = (4 p x 5 L/pd + 50 L) = 70 L/d = 70 litres per day plus 5l x 50 outpatients = 250 L per day 5 people at the hub 5 p x 60 L = 300 L per day Total 70 + 250 + 300 = 620 litres per day Total water treatment: Assume 12 hr working day = 620/12 = 51.66 litres per hour throughput required Total storage needs: At the "Hub": 620 x 3 (72 hours' storage) = 1860 L ≈ 2000 litres storage capacity For each field team: 70 + 250 L = 320 litres storage capacity	**Assumptions:** Team members 40–60 litres/ppd (per person per day) Outpatients 5 L/ppd An additional 150 L potable water per day will provide for cleaning and sterilization if required **Calculation:** Total water requirements 26-person team (26 p x 60 L/pd) + (100 outpatients x 5 L/pd) +150 L = 2210 L per day Total Water treatment Assume 12 hr working day = 2210/12 = 185 litres per hour throughput required Total storage needs: 2210 x 3 (72 hours' storage) = 6630 litres ≈ 7000 litres storage capacity	**Assumptions:** Team members 40–60 litres/ppd Outpatients 5 L/ppd Inpatients 60 L/ppd Surgical procedure 100 L 60-person team running a 20 bed 1 operating theatre T2 **Calculation:** (60 p x 60 L/pd) + (100 outpatients x 5 L/pd) + (20 inpatients x 60 L/pd) + (15 surgical int. x 100 L) = 6800 litres per day Adding water for flushing latrines, cleaning latrines and cleaning waste containers: 200 uses per flush 5 litres each use 200 uses x 5 L = 1000 litres 1000 litres extra for cleaning facilities and sterilization Total water treatment Assume 12 hr working day = 8800/12 = 733 litres per hour throughput required Total storage needs: 8810 x 3 (72 hours storage) = 26 430 litres ≈25 000 litres storage capacity	**Assumptions:** Team members 40–60 litres/ppd Outpatients 5 L/ppd Inpatients 60 L/ppd Surgical procedure 100 L **Example:** A 100-person team running a 100 bed, 2 operating theatres Type 3 with a large outpatient facility operating as the main replacement for regional hospital (100 p x 60 L/pd) + (200 outpatients x 5 L/pd) + (40 inpatients x 60 L/pd) + (30 surgical int. x 100 L) = 12 400 L per day Adding water for flushing latrines, cleaning latrines and cleaning waste containers. 300 uses per flush 5 litres each use: 300 x 5 = 1 500 litres 1000 litres extra for cleaning facilities and sterilization Total water treatment Assume 12 hr working day = 14 900/ 12 = 12 416 litres per hour throughput required Total storage needs: 14 900 x 3 (72 hours' storage) = 44 700 litres ≈ 45 000 litres storage capacity

HYGIENE

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
Teams must ensure they have appropriate arrangements for adequate hygiene at the facility (meaning handwashing stations, handrub solution, alcohol-based solutions). Minimum: One handrub solution at points of care. Handwashing stations in communal areas and main entrance to the hospital facility. Hand hygiene promotion Information Education and Communication (IEC) materials clearly visible and understandable at key places.	Teams must ensure they have appropriate arrangements for adequate hygiene at the facility (meaning handwashing stations, handrub, alcohol-based solutions). Minimum: One handrub solution at points of care. Handwashing stations in communal areas and main entrance to the hospital facility. Hand hygiene promotion IEC materials clearly visible and understandable at key places.	At least one handrub solution at all points of care. Appropriate handwashing stations in points of care, key places and service areas. There should be at least two hand hygiene stations in a ward with more than 20 beds. Appropriate menstrual and washing stations for managing menstruation with dignity; provide incontinence products and aids. Hand hygiene promotion IEC materials clearly visible and understandable at key places.	As per Type 2
Assumptions: Team of 13 Handwashing stations 3 Mobile handwashing basin per mobile team 1 Staff showers 2	**Assumptions:** Team of 26 Handwashing stations 7–10 Staff showers 2	**Assumptions:** Team of 60 Handwashing stations 10–15 Staff showers 4 Patient showers 2	**Assumptions:** Team of 80 Handwashing stations 20–25 Staff showers 6 Patient showers 4

ENVIRONMENTAL CLEANING

Summary of environmental cleaning requirements estimations based on typology

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
No reusable linens required; however, EMTs must have protocol for addressing soiled staff clothing. Appropriate and well-maintained materials for cleaning (meaning detergent, mops, buckets, etc.) are available. At least two spill kits per clinical area	No reusable linens required; however, EMTs must have protocol for addressing soiled staff clothing. Appropriate and well-maintained materials for cleaning (meaning detergent, mops, buckets, etc.) are available. At least two spill kits per clinical area Separate (equipment, procedures) the cleaning approach with regard to the risk area. At least two pairs of household cleaning gloves and one pair of overalls or apron and boots in a good state, for each cleaning and waste disposal staff member.	Appropriate and well-maintained materials for cleaning (meaning detergent, mops, buckets, etc.) are available. At least two spill kits per clinical area. Separate (equipment, procedures) the cleaning approach with regard to the risk area. Compulsory patient linen laundry	As per type 2

WASTE MANAGEMENT

See examples below for estimating the waste to be produced, minimum containment and treatment capacity, please note that these calculations are based on assumptions and exact quantities might vary.

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
Type 1 mobile with 2 mobile teams need a technology with a minimum treatment capacity of 20 kg (every two days). Each mobile team needs to ensure the capacity to contain and safely transport 42 litres of waste in sealed containers to the EMT base camp.	Type 1 fixed need a technology with a minimum treatment capacity of 10 kg per day. Infectious hazard containment needs: 100 litre containment capacity.	Inpatients infectious waste generation around 12 kg infectious waste per day; outpatients infectious waste generation around 9 kg. Type 2 need a technology with a minimum infectious waste treatment capacity of 20 kg per day. Infectious hazard containment needs: 200 litre containment capacity	Inpatients infectious waste generation around 24 kg infectious waste per day, Outpatients infectious waste generation around 18 kg. Type 3 need a technology with a minimum infectious waste treatment capacity of 40 kg per day. Containment needs: 400 litre containment capacity
Assumptions: Each mobile team 50 outpatients per day, 0.07 kg infectious waste per patient, maximum storage of infectious waste: two days (48 hours). Calculation: 50 patients x 0.07 kg/patient x 1.2 (safety margin) = 4.2 kg infectious waste per day two days of storage x 4.2 kg per day = 8.4 kg every two days Result: This Type 1 mobile with 2 mobile teams needs a technology with a minimum treatment capacity of 16.8 kg (every two days). The size of containers required for transporting waste from the mobile clinics to base operations: the average density of the uncompacted waste is 200 kg/m3 (8.4 kg x 1000 litres/200 kg = 42 litres, meaning team needs to ensure capacity to contain and safely transport 42 litres of waste in sealed containers	**Assumptions:** 100 outpatients per day, 0.07 kg infectious waste per patient, maximum storage of infectious waste: two days (48 hours). Calculation: 100 patients x 0.07 kg/ patient x 1.2 (safety margin) = 8.4 kg infectious waste per day two days of storage x 8.4 kg per day = 16.8 kg every two days Result: This Type 1 fixed needs a technology with a minimum treatment capacity of 16.8 kg (every two days)	**Assumptions:** 20 inpatients; 100% bed occupancy rate (BOR); 1-hour cycle time, 8 hours waste treatment per day; seven treatment days per week; 0.5 kg infectious waste per bed per day. 100 outpatients per day, 0.07 kg infectious waste per patient, maximum storage of infectious waste: two days (48 hours). Calculation: Inpatients infectious waste generation 20 beds x 100% BOR x 0.5 kg/ bed/day x 1.2 (safety margin) = 12 kg infectious waste per day Outpatients infectious waste generation 100 patients x 0.07 kg/patient x 1.2 (safety margin) = 8.4 kg infectious waste per day Containment needs: maximum storage of infectious waste: two days 20.4 kg x two days = 40.8 kg 40.8 kg x 1000 litres/200 kg = 204 litre container Treatment capacity: 20.4 kg/8 working hours = 2.55 kg per hour Result: This Type 2 needs a technology with a minimum treatment capacity of 3 kg per hour	**Assumptions:** 100 inpatients; 100% BOR; 1-hour cycle time, 8 hours waste treatment per day; seven treatment days per week; 0.5 kg infectious waste per bed per day. 200 outpatients per day, 0.07 kg infectious waste per patient, maximum storage of infectious waste: two days (48 hours). Calculation: Inpatients infectious waste generation 100 beds x 100% BOR x 0.5kg/ bed/day x 1.2 (safety margin) = 60 kg infectious waste per day Outpatients infectious waste generation 200 patients x 0.07 kg/patient x 1.2 (safety margin) = 16.8 kg infectious waste per day Containment needs: maximum storage of infectious waste: two days 76.8 kg x two days = 153.6 kg 153.6 kg x 1000 litres/200 kg = 768 litres container Treatment capacity: 76.8 kg/8 working hours =9.6 kg per hour Result: This Type 3 needs a technology with a minimum treatment capacity of 10 kg per hour

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
Teams must be able to manage and collect and contain their own excreta waste for safe disposal (meaning portable toilet with plastic bag and absorbent granules). Latrines Team members 1 : 20 latrines gender separated Outpatients 1 : 50 latrines Gender ratio, people with disability, child friendly should be considered.	Toilets clearly separated for staff and patients. System in place that identifies which toilets are for staff use and patient use. Latrines Team members 1 : 20 latrines gender separated Outpatients 1 : 50 latrines Gender ratio, people with disability, child friendly considered. At least one toilet provides the means to manage menstrual hygiene needs. At least one toilet for isolation ward.	Toilets and showers clearly separated for staff and patients. System in place that identifies which facilities are for staff use and patient use. Latrines Team members 1 : 20 latrines gender separated Outpatients 1 : 50 latrines 1 : 20 Inpatients Gender ratio, people with disability, child friendly should be considered. At least one toilet provides the means to manage menstrual hygiene needs. Appropriate handwash facilities at toilets. At least one toilet for isolation ward.	As per type 2
Faecal sludge management at EMT base camp via containment and onsite treatment if local structures are not able to assume the waste.	Faecal sludge management at containment and onsite treatment if local structures are not able to assume the waste. Showers/washing wash stand ability for gross cleaning of outpatient if required prior to assessment male/female staff shower	Faecal sludge management at containment and onsite treatment if local structures are not able to assume the waste. This needs to include the ability to provide separate toilet and wash facilities to manage isolated staff patients in the event of a gastrointestinal/diarrheal outbreak.	
Grey water management at EMT base camp via grease trap plus infiltration or containment.	Grey water management grease trap plus infiltration or containment and treatment	Grey water management via grease trap plus infiltration or containment and treatment. A disposal/ treatment mechanism for infectious grey waters should be considered.	

Type 1 Mobile	Type 1 Fixed	Type 2	Type 3
Base camp for staff: 2 1 mobile toilet solution for field visits (for staff) per team Example: Total toilet requirements Staff Field: 2 teams x 4 person = (1 x2) = 2 latrines Base of Operations: 13 person at the EMT base camp = 2 latrines separated by gender Total = 1 +1 = 2 Staff latrines Total toilet requirements Outpatients: Field: 2 teams x 50 outpatients each= (1:50 x2) = 4 2 sets of 2 latrines separated by gender and persons with disability (pwd) adapted for children Total shower requirements Staff Base of Operations: 13 person at the EMT base camp = 2 showers separated by gender	Staff: 2 Patient area: 4 (2 outpatient) (1 isolation toilet) (1 limited mobility accessible toilet) Example: Total toilet requirements Staff Field: 26-person team = 2 Staff latrines separated by gender Outpatients: 100 outpatients 3 latrines waiting area (2 separated by gender and one for pwd adapted for children) latrine isolation ward = 4 latrines total shower requirements Staff 26 person = 2 showers separated by gender	Staff: 4 Patient areas: 6 (2 outpatient) (2 inpatient 1 male 1 female) (one isolation toilet) (one limited mobility accessible toilet) Example: 60-person team running a 20 bed 1 operating theatre T2, 100 outpatients a day Total toilet requirements Staff Field: 60-person team = 6 Staff latrines separated by gender Outpatients: 100 outpatients 3 latrines waiting area (2 separated by gender and one for pwd adapted for children) Inpatients: 1 latrine isolation ward 3 latrines (2 separated by gender and one for pwd adapted for children) Total shower requirements Staff 26 person = 2 showers separated by gender Inpatients: 3 showers 2 separated by gender and one for pwd adapted for children	Staff: 6 Patient areas: 8 (2 outpatient) (2 inpatient) (one isolation toilet) (one limited mobility accessible toilet) Example: 100-person team running a 100 bed 2 operating theatre T3 with a large outpatient's (200 patients a day) facility operating as the main replacement regional hospital Total toilet requirements Staff Field: 100-person team = 10 staff latrines separated by gender Outpatients: 200 outpatients 6 latrines waiting area (4 separated by gender, 2 for pwd adapted for children) Inpatients: 4 latrine isolation ward latrines 10 latrines (8 separated by gender, 2 for pwd adapted for children) Total shower requirements Staff 100 person = 4 showers separated by gender Inpatients: 9 showers 6 separated by gender, 2 for pwd adapted for children
Total grey water At the EMT base camp: approx. 500 litres	Total grey water approx. 1500 litres	Total grey water Approx. 4500 litres	Total grey water Approx. 12 000 litres

Emergency Medical Teams
World Health Organization
Avenue Appia 20
CH-1211 Geneva
Switzerland
Email: emteams@who.int
Web: https://extranet.who.int/emt/