



Guide | MASS
CASUALTY
PREPAREDNESS
AND RESPONSE
**IN EMERGENCY
UNITS**

Version 20220501



Editors

For WHO Academy

Nelson Olim
Sara Halimah*
Neil Shorney
Alice Malachane

* WHO Eastern Mediterranean Regional Office

For Integrated Health Services

Teri Reynolds
Lee Wallis

For Emergency Medical Teams Network

Flavio Salio
Pryanka Relan

Acknowledgments

Delphi Participants:

The following experts completed the 3 rounds of the Delphi process:

NAME	AFFILIATION	CITY	COUNTRY	FUNCTION
Alison (Ally) Hutton	The University Of Newcastle	Newcastle	Australia	Academic
Andrea Tenner	University Of California San Francisco	San Francisco	USA	Academic
Emma Keeling	Imperial College	London	UK	Academic
Emmanouil Pikoulis	National And Kapodistrian University Of Athens , Nkua	Athens	Greece	Academic
Evika Karamagioli	National And Kapodistrian University Of Athens	Athens	Greece	Academic
Heike Geduld	Stellenbosch University/ Afem	Cape Town	South Africa	Academic
Kobi Peleg	Tel Aviv University	Modiin	Israel	Academic
Jean-Marc Philippe	French Ministry Of Health	Paris	France	Academic
Alan Kay	Royal Centre For Defence Medicine	Birmingham	UK	Clinician
Barclay Stewart	University Of Washington	Seattle	USA	Clinician
Duncan Bew	King's College Hospital	London	UK	Clinician
Emad Fawzi Abu Yaqeen	Albasheer Hospital	Amman	Jordan	Clinician
Joseph Kalanzi	Makerere University	Kampala	Uganda	Clinician
Juma Mfinanga	Muhimbili National Hospital	Dar Es Salaam	Tanzania	Clinician
Justine Lee	University Hospitals Birmingham	Birmingham	UK	Clinician
Ken Boffard	Johannesburg Hospital	Johannesburg	South Africa	Clinician
Lee Wallis	University of Cape Town	Cape Town	South Africa	Clinician
María F Jiménez	Hospital Universitario Mayor Mederi	Bogota	Colombia	Clinician
Timothy Craig Hardcastle	Ukzn And Doh Kzn	Durban	South Africa	Clinician
Ahmed Abouteir	WHO	Gaza	Palestine	Managerial
Athanasios Gargavanis	WHO	Jerusalem	Palestine	Managerial
Harald Veen	WHO	Geneva	Switzerland	Managerial
Husam Mahmoud Abuolwan	WHO	Gaza	Palestine	Managerial
Laura Archer	-	Charlottetown	Canada	Managerial
Osan Ismail	WHO	Sana'a	Yemen	Managerial
Sameh Ali Hussein	WHO	Sana'a	Yemen	Managerial
Wayne Smith	Western Cape dep. of Health	Cape Town	South Africa	Managerial

The following international experts also contributed to the discussions and development of this guide by participating in one or more follow-up meetings:

Ally Munir Akrabi; Amin Lamrous; Christine Gaarder; Edward Chu; Emilie Calvello, Gila Hyams; Hendry Sawe; Iyad Ahmed; Kees Bartlema; Mathieu Raux; Nobhojit

Roy; Omar Hussein Ali; Patrick John Shao; Vivien Benoit; Walid Abougalala

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Abbreviations

CBRN chemical, biological, radiological, nuclear (incident)

EU emergency unit

ECS emergency care system

EMT emergency medical team

EMTCC emergency medical teams coordination cell

HDU high dependency unit

ICT incident command team

ICU intensive care unit

IPC infection, prevention, and control

MC mass casualty

MCI mass casualty incident

MCM mass casualty management

NGO non-governmental organisation

PPE personal, protective equipment

Introduction

The World Health Organization defines mass casualty incidents (MCI) as disasters and major incidents characterized by quantity, severity, and diversity of patients that can rapidly overwhelm the ability of local medical resources to deliver comprehensive and definitive medical care.

A mass casualty incident occurs when the demand for clinical services brought on by a sudden event exceeds the capacity of a health care system to supply them. It can happen anywhere and at any time and impacts not only those directly involved in the incident, both patients and healthcare workers, but also the entire community.

For all hazards that cause mass casualties, a robust pre-existing emergency care and trauma system is essential to provide an effective initial response to mass casualty management (MCM) and vital for continuity of care for everyday emergencies. Emergencies arising from diverse hazards trigger mass casualty incidents affecting large groups of people and causing excess mortality, not only through direct effects of the event but prominently via disruption of essential healthcare services. In the immediate aftermath of a large-scale disaster, the ECS is likely to be the major functioning platform for maintaining general health care services for acute complaints.

Careful planning and preparation will minimize the risk of ECS disruption and will save lives. If needed, well prepared, emergency care systems can rapidly scale up efforts to respond to further health crises that may arise as a result of the disaster.

During an MCI, hospital-based Emergency Units (EU) often represent the frontline of the health system and are key to an effective emergency response. In particular, the EU may be the first point of contact with the health system for many people, providing timely recognition of time-sensitive conditions, resuscitation and referral for severely wounded patients. In certain contexts, deployed EMTs may play the role of a frontline health facility.

The WHO Academy has developed the Mass Casualty Management Programme for frontline healthcare staff working in emergency units. These include doctors, nurses, logistics support staff, management and technicians. MCM competence related micro and macro-credentials can be obtained through the Academy's digital platform.

In order to better support governments, training institutions, professional societies and NGOs to enhance local capacity to manage a mass

casualty incident, whenever possible the MCM Guide should be integrated into medical, paramedical and nursing undergraduate and postgraduate training programmes. Professional Societies have a paramount role in achieving this goal.

MCM is a complex multifaceted process and although the WHO Academy MCM programme is an EU centred programme, it also recognises that the EU alone is not independently adequate to address all aspects of an emergency. A successful mass casualty outcome requires coordination and collaboration from multiple governmental and organizational structures as well as all stakeholders within the response, which might include first responders, healthcare workers, hospital management, local, regional and in some instances, national authorities or Emergency Medical Teams.

Whenever available, WHO standards are applied in this document. Special considerations on MCM standards, and their applicability to deployed Emergency Medical Teams, have been added to each of the key MCM components. MCM training for EMTs, may be included as part of a wider package of training, for example Emergency Medical Teams Coordination Cell (EMTCC) training.

Aim and Target Audience

At the time of this publication WHO is developing normative guidance on Mass Casualty Management Systems. The aim of this publication, as part of this larger process, is to contribute towards a set of standards and a globally consistent language regarding MCM at the level of the Emergency Unit. It can be used as a reference workbook for MCM learners to prompt thoughts and participants analysis of their own system and it can be used as a comprehensive syllabus for those involved in the design, development, and delivery of mass casualty management courses.

Scope

This document focuses on the management of casualties resulting from mass casualty incidents. It highlights the critical role the EU plays as an essential mitigation strategy within disaster management to avoid excess mortality and reduce morbidity. Specific protocols for the management of chemical, biological, radiological, nuclear (CBRN) events are outside the scope of this document.

Methodology

The context and resource agnostic MCM components described in this document have been designed and developed through a three-round Delphi process and multiple international experts consultations.

Recognising that a universally applicable MCM framework must be capable of being adapted to a wide range of geopolitical and resource settings, emergency healthcare workers, educators and other stakeholders such as emergency medical services, health facility managers, regional and national disaster management agencies, should enrich and expand this basic framework to their local needs.

The Delphi process

A three-round modified Delphi process was used amongst a subject expert group. Participants from geographically and diverse emergency settings were invited to ensure appropriate representation, with experience of natural disasters, road traffic accidents, conflict and civil unrest. Participants were identified through the World Health Organization network. Participants were briefed about the study face to face, or through email communication and the procedure of Delphi took place between October 12th and November 10th, 2020. The inclusion criteria were trauma care specialists having worked in trauma for over 10 years, either in a clinical setting, academic or managerial. A total of 63 experts and opinion leaders were invited to participate in the study, and 32 were available for the proposed dates. During the study, 5 panel members withdrew from the study due to agenda conflicts. Of the 27 who completed the three rounds, 11 were clinicians, 8 academic and 8 managerial.

The initial study design was face-to-face Delphi; however, it became evident that drawing upon a geographically disparate group would be logistically difficult to bring together for in-person group discussions. All rounds were therefore conducted using video conferencing. Voting was done using “SurveyMonkey” (round 1 and 2) or an Electronic pooling system (round 3)

In round 1, participants were requested to identify building blocks for an effective mass casualty management response in emergency departments that would be context and resource agnostic. 43 components were identified. The suggestions were aided by an extensive literature review. A technical team independently reviewed the suggested recommendations and synthesized the responses into categories.

The initial suggestions were then presented to the group in round 2 and participants further analysed the feasibility of applying each

recommendation, applicable across all health systems, be it high-resource or low resource, thus identifying the common denominators for mass casualty management.

During round 2, after discussion, participants were asked to select their level of agreement using the 5 points on the Likert scale, by assigning scores from 2 to -2. Strongly agree scored 2, agree scored 1, neither agree nor disagree scored 0, disagree scored -1 and strongly disagree scored -2. For each component, the total score was summed and then divided by the number of participants to create an average score per component.

In round 3, the results of round two were presented to allow participants to reflect on the outcome before repeating the same scoring process.

The Delphi questionnaire changed from iteration

to iteration: (1) in the first round, the questionnaire was more qualitative to allow identification of various possible elements relevant to the research problem and discernible beyond the literature review (possible future events, definitions or elements of a definition, indicators etc.); (2) in the second round, the questionnaire was more quantitative and standardised – different assessment and ranking scales were used; (3) in the third step, the questionnaire was prepared on the basis of the results of the second round (ranking or validation of elements, exclusion of irrelevant elements), and allowed the participants to evaluate the outcome of the second round and, if necessary, make further revisions. The number of rounds/ iterations depends on when the panellists reach a consensus or the researchers are happy with the result and do not see possibilities of making much progress with an additional round. In the MCM modified Delphi process this was achieved after 3 rounds.

In summary, round 1 was more quantitative and allowed the WHO to identify various possible elements, exploring possible best practices beyond the literature. In round 2, a more structured and quantitative questionnaire was presented and in round 3, the questionnaire was prepared based on the results of round 2, allowing participants to focus on any necessary revisions. The main outcome was the proportion of participants agreeing or strongly agreeing with the recommended components. If $\geq 80\%$ strongly agreed or agreed, it was accepted, whilst if the consensus disagreement or strongly disagree was $\geq 80\%$, it was rejected.

On completion of the MCM modified Delphi process, 25 key components received more than 80% agreement in at least two consecutive rounds. Two additional virtual meetings were then organized with the original expert group to refine the components and agree on a consensual vocabulary.

How to use this document

This document comprehensively covers the key components for preparing and responding effectively to a mass casualty incident, at the level of the EU. It is designed to help emergency healthcare workers obtain, retain, and apply the knowledge necessary to effect organizational changes in their workplace.

For the practical teaching of the subject, several educational approaches can be used to improve learner's skills and competences. These may include digital techniques including mixed reality; In-person learning, small group learning; case-based discussions; table-top and functional exercises; independent studies; patient tracking; role-playing; simulation and undertaking improvement projects.

There are benefits and challenges with each of these approaches and educators should bear in mind that different learning goals can be achieved by selecting different approaches.

Under each MCM component, a series of tables have been developed to facilitate the understanding of each component and its implications.

Preparedness activities

What needs to happen in the preparedness phase to achieve this component activities

Response activities

What happens during the response phase

Implementation tips

Tips from experts on how to implement this component

Questions for consideration

Critical aspects often disregarded, or aspects that require careful consideration when incorporating this particular component.

Special considerations for Emergency Medical Teams

How to adapt this component to a deployed EMT

Underlying Principles

This document has been developed in alignment with WHO's principles. These are:

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.

The health of all peoples is fundamental to the attainment of peace and security and is dependent on the fullest cooperation of individuals and States.

The achievement of any State in the promotion and protection of health is of value to all.

Unequal development in different countries in the promotion of health and control of diseases,

especially communicable disease, is a common danger.

Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.

The extension to all peoples of the benefits of medical, psychological, and related knowledge is essential to the fullest attainment of health.

Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people.

Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.

Learning Objectives

After completing an MCM course based on the principles identified in this publication, learners should be able to:

Evaluate the local situation to ensure an “all-hazards” approach is followed

Understand what an MCI incident is in the context of their geographic and economic situation

Understand the need to apply generic planning principles

Understand the components that must be considered when drawing up a preparedness and response plan for their EU/EMT

Understand the roles and functions of the various components required to manage an MCI in an EU

Evaluate the potential to task-shift and diversify roles to ensure care provision

Definitions

Capacity building

Efforts aimed to develop those human skills or societal infrastructures within a community or organization needed to reduce the level of risk. In extended understanding, capacity building also includes the development of institutional, financial, political and other resources, such as technology at different levels and sectors of society.

Casualty

Any human accessing health or medical services, including mental health services and medical forensics/mortuary care (for fatalities), as a result of a hazard impact. **In American English this term is commonly used to refer to fatalities only.**

Community

A group of people with a commonality of association and generally defined by location, shared experience, or function. A community (with its five elements: people, property, services, livelihoods, and environment) has four major features. They: own common assets for responding to an emergency (police, fire, hospital, etc.); have authority for decision making delegated by a higher authority; have responsibility for their own financial and human resources; are accountable for their actions.

Disability

An umbrella term for impairments, activity limitations and participation restrictions denoting the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors).

Emergency medical condition

An event, actual or imminent, which endangers or threatens to endanger life, property or the environment, and which requires a significant and coordinated response.

Emergency Care System

Emergency care systems address a wide range of acute conditions, including injuries, communicable and non-communicable diseases, and complications of pregnancy, and especially when there are barriers to health care access, people may seek care only when acutely ill or injured. Emergency care is an essential component of universal health coverage and for many people around the world is the primary point of access to the health system.

Emergency Medical Teams

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 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.

Environmental factors

Refers to the physical, social, and attitudinal environment in which people live and conduct their lives, for example products and technology; health systems and financial resources, the natural environment; support and relationships; attitudes; services, systems, and policies.

Expectant

Patients who have been categorised as untreatable in the current context. The triage category – Blue – is used to refer to patients that are beyond the current technical capacity of the facility or are unsalvable regardless of the context. **Expectant should not be confused with pregnant in areas where this terminology is common.**

Green Zone

The area of the facility to which all walking patients are taken, re-triaged and treated accordingly

Hazard

A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption, or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydrometeorological and biological) or induced by human processes (environmental degradation and technological hazards). Hazards can be single, sequential, or combined in their origin and effects. Each hazard is characterized by its location, intensity, frequency, and probability

Health Care Facility

This term encompasses hospitals of all sizes and types; specialized medical services; primary health care clinics; general practitioner's surgery, etc.

Definitions

Health System

A health system consists of all the organizations, institutions, resources, and people whose primary purpose is to improve health. The key components of a well-functioning health system include leadership and governance, service delivery, human resources, essential medical products and technologies, health information systems and health financing.

Incident command team

A standardized hierarchical structure that allows for a cooperative response. The primary role of the incident command team is to oversee the implementation of the emergency response plan in a coordinated and systematic approach. This structure can be setup at different levels including EU, Hospital, Public Health, etc.

Mass Casualty Coordination

Coordination between prehospital and hospital systems in a region or country

Mass Casualty Incident

An event which generates more patients at one time than locally available resources can manage using routine procedures. It requires exceptional emergency arrangements and additional or extraordinary assistance.

Mass Casualty Management

A coherent and interrelated set of established procedures, policies, and plans that contribute to the shared objectives of optimizing the baseline capacity to deal with patient populations expected in a mass casualty incident, and efficiently increasing this capacity during the response to a mass casualty incident.

Mitigation

The lessening or limitation of the adverse impacts of hazards and related disasters.

Definitions

Operational debriefing

A meeting of the relevant people after an operation/ emergency response has happened. This is an opportunity for feedback on issues, such as planning, organisation, and execution.

Personal factors

Factors that relate to the individual, for example age, gender, social status and life experiences.

Preparedness

The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters

Prevention

Outright avoidance of the negative effects related to the hazard.

Recovery

The restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development and 'build back better', to avoid or reduce future disaster risk.

Relief

The provision of assistance during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

Definitions

Red Zone

The area within an EU to which all non-walking patients are taken. The Red Zone is the result of the expansion of the Emergency Unit resuscitation capacity. It's an area dedicated to emergency life and limb saving interventions as well Step 2 triage.

Resilience

The ability of a system, community or society exposed to a hazard to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Risk analysis

Systematic use of available information to determine how often specific events may occur and the magnitude of their likely consequences.

Risk mitigation

Includes all actions to reduce the severity of probability of occurrence of, or exposure to a given hazard and therefore lessen its impact.

Stakeholders

Those who may be affected by or perceive themselves to be affected by the emergency risk management process.

Definitions

Standard Operating Procedures

A set of instructions covering those features of operations which lend themselves to a definite or standardized procedure without loss of effectiveness.

Surge capacity

The ability of institutions (such as clinics, hospitals, or public health laboratories) to respond to increased demand for their services during a public health emergency.

Triage

Triage is the systematic process of classifying patients by acuity to ensure the best match between available resources and needs. Triage is an essential component of emergency care during routine and surge conditions, and is a process applied to all patients, allowing assessment of the individual patient in context. During an MCI, triage is a multistep process designed to identify those who would most benefit from medical intervention.

Unidirectional flow

A single directional flow of patients inside the EU designed to maximise efficiency and minimise disruption in care.

The fundamental shift: from routine care to mass casualty

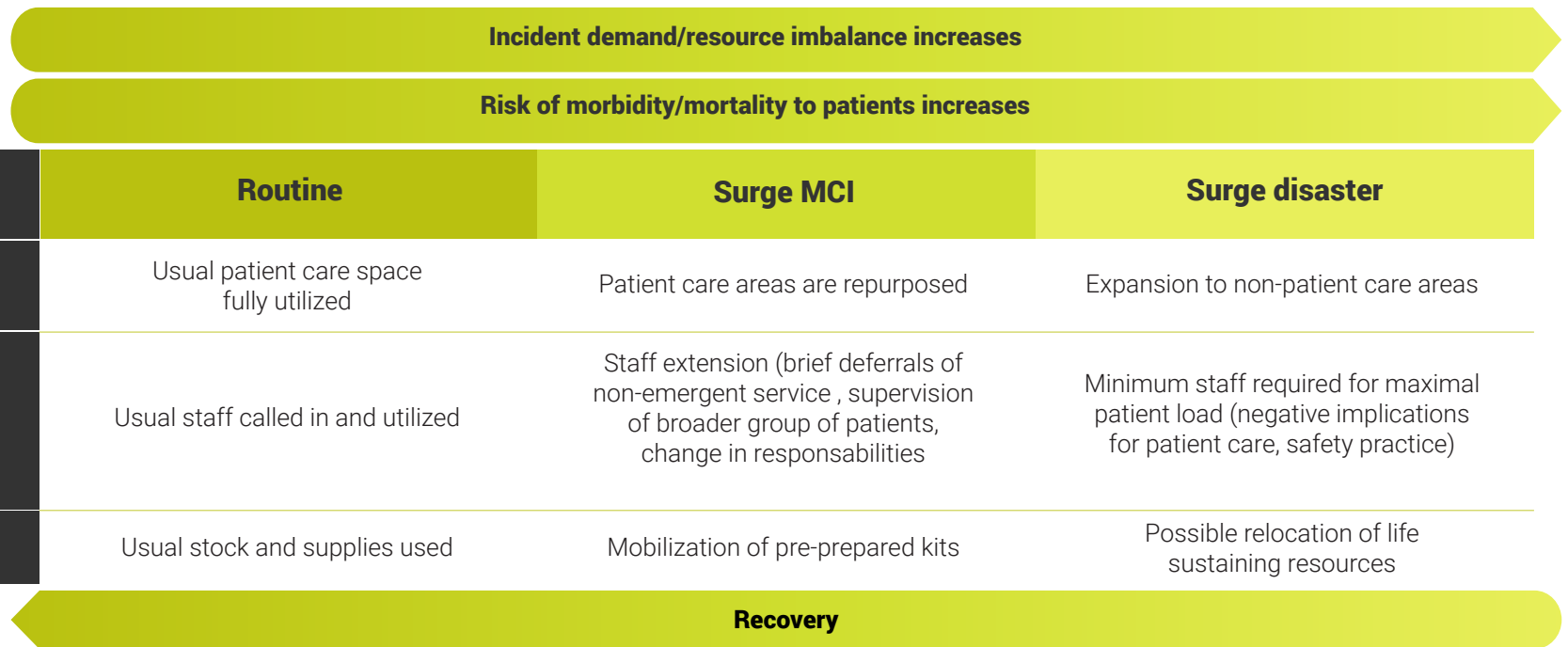
A successful mass casualty response requires a fundamental shift in the approach to patient care. In the day-to-day care of patients, an emergency unit will aim to ensure the best possible outcome for each patient as an individual. However, in a mass casualty situation, where human and material resources are, by definition, inadequate, it is necessary to identify and provide treatment to those who will most likely benefit from medical intervention.

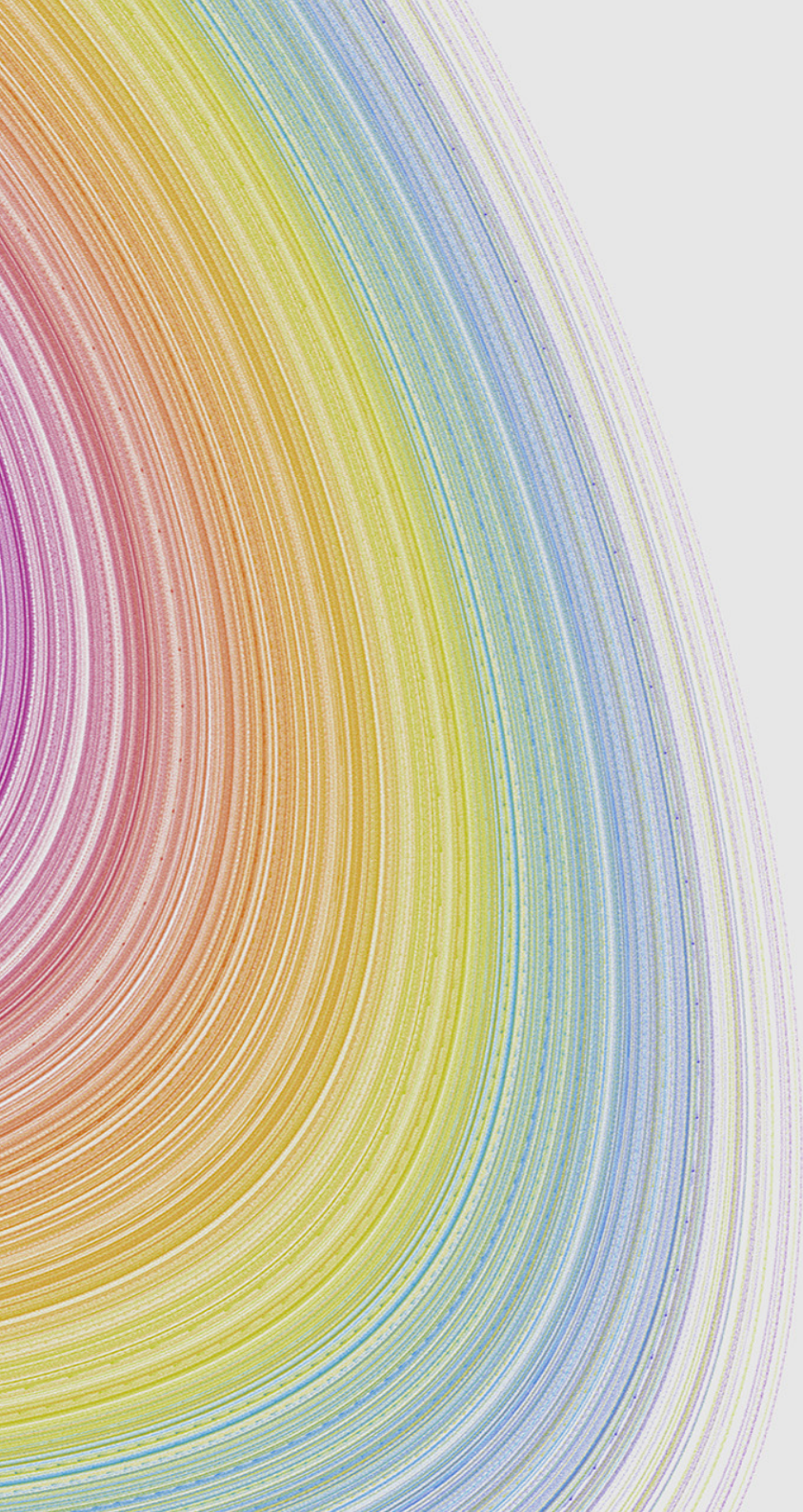
This change in approach is reflected in all of the elements of the mass casualty response, from the point of triage to the allocation of resources, and ultimately to the definitive treatment pathway.

Recognising that this is in effect a move away from the accepted ethical approach to patient care, this document is structured to offer guidance to staff in overcoming the challenges and difficulties in implementing this unfamiliar

approach to patient care. **Remember that this approach only applies to mass casualty situations. If you have adequate human and material resources to provide optimal individual patient care, you are, by definition, not in a mass casualty response (regardless of the number of patients you have)** and these crisis standards of care do not apply.

The fundamental shift: from routine care to mass casualty





COMPONENTS OF MASS CASUALTY MANAGEMENT IN THE **EMERGENCY UNIT**

This section explains the twenty-five key components that have been identified as being essential to an effective mass casualty response in the emergency unit. Each component identifies and expands on one facet of the response to a mass casualty. It also offers implementation tips and questions to encourage reflection. Learners are encouraged to use each component to build the relevant aspect their own plan.

Component 1.

Develop a mass casualty management plan

Every emergency unit (EU/EMT) must have an MCM plan. This plan should be capable of being fully integrated and aligned to the wider health facility and the prehospital plans. However, if there is a defined EU, it should have a plan capable of rapid independent activation as it will, in most instances, be the first point of patient contact within the health facility.

By developing an MCM plan for the EU, responsibility, accountability and hierarchical structure are clarified in advance, as well as the goals and objectives of the response. Additionally, the plan promotes efficient communication, efficient resource utilization, and ultimately the safety of the staff and patients. It includes the definition of roles and responsibilities, and the operating procedures

to be used in the management of the incident as, for example, defining the maximum capacity of the EU and the minimum resources needed, management of patient flow and the conceptual spaces of the EU.

The activated EU plan can then cascade into the wider health facility plan as needed. These plans can be implemented simultaneously, but the whole facility plan is likely to require more time to activate.

Whenever possible, the overall responsibility for ensuring each health facility has an MCM plan should rest with the authority designated to coordinate prehospital and facility-based emergency care, thereby facilitating regional and national trauma response coordination. In the

absence of a coordinating authority, the EU (as the first point of contact), should be responsible for the design, activation and implementation of a plan.

During the planning phase you should be aware that the demand for increased space for treatment may require expansion into suitable adjacent hospital areas. For example, surgical speciality wards, outpatient areas, or even areas such as the cafeteria. These areas should be large, safe and protected from the elements and preferably close to the EU.

MCI's provide continuous challenges to healthcare systems. It is very important to learn from other national and international incidents to keep updating your local MCM plan.

Component 1.

Develop a mass casualty management plan

Preparedness activities

Develop an EU MCM plan, aligned to the wider health facility and prehospital plans

Response activities

Activate the plan

Implementation tips

The plan must be generic enough that anyone can implement it, activate it, and assign tasks while collapsing the hierarchy as needed.

As a first step form a committee to oversee the planning and training process and assign specific responsibilities. Ensure the committee has representatives from all MCM stakeholders.

Ensure your committee meets regularly to ensure the plan is kept up to date
Avoid reliance on particular people or ranks before a step can be implemented
Consider adopting capability-based planning. This involves an analysis of the requirements for every scenario you think you may be faced with so that the core plan can be used in every situation.

Identify your capabilities based on the tasks you think will be required and then you can develop the most effective and efficient way to satisfy them.

Questions for consideration

How does MCM differ from the day-to-day routine in your hospital?

What roles will be needed and who is qualified to adopt these?

How would you ensure that all staff are familiar with the plan?

How would you ensure that your EU plan integrates with the overall facility plan if available?

What role does your facility fulfil in a Mass Casualty Incident response?

Special considerations for Emergency Medical Teams

EMTs deployed to the field function as an adjunctive provider of health care delivery during times of surge and become an integral part of the local health system. Whether in support mode or in full substitution mode, EMTs must be part of the local / regional mass casualty response plans.

EMTs must develop their own MCM preparedness and response plan, but unlike other health facilities, the "EU plan" and the "health facility plan" are merged into one.

EMTs Type 1 fixed, Type 2 or Type 3 do not have a traditional EU, but in concept the whole EMT functions as an extended version of an EU with wards, operating theatre (Type 2), and Intensive Care Unit (Type 3). Therefore, the EMT MCM plan must be designed for the whole EMT.

Type 1 fixed EMTs have the same limitations as a primary health care facility. They can provide definitive care for green patients but the lack of operating theatres means that during a MCI they will mainly perform as a triage, stabilization, and transfer facility.

Component 2.

Operational phases of the plan

There are several reasons for dividing a mass plan into distinct phases. Primarily, a phased approach allows staff to recognize their required functions as the needs change at any given moment. It also delivers a common language when communicating the mass casualty status, to internal and external actors. When establishing a mass casualty plan, a minimum of **three** operational phases needs to be defined above baseline preparedness (day-to-day activities). The suggested phases to an MCI response are:

Phase 1 Declared / Full activation

The purpose of this phase is to prepare and implement treatment for the arriving patients, using all the available resources in the EU and other parts of the health facility. The hospital emergency plan should also be activated at this stage. The EU should be cleared / decanted by either discharging patients, admitting them to the hospital, or moving them to a pre-designated area.

Phase 2 De-escalation

This occurs when the MCI emergency activity scales down, when there is a significant decline in the number of MCI related casualties arriving to the EU, or if the pre-hospital system announces the arrival of the last patient. The EU and other units may still be operating under full capacity due to ongoing care related to the incident.

As part of phase 2, there needs to be an assessment of any continuing incident generated workload (which may last for days in terms of surgery and critical care) so it can be coordinated with a managed return to business as usual, as rapidly as possible. During this phase, patient care will shift to the rest of the facility or transfer out.

Phase 3 Recovery

All or most of the MCI patients have been cleared from the EU. During this phase:

- Supplies should be replenished

- Damaged equipment replaced

- Staff recovery and staff debriefing occurs

- The EU should return to baseline preparedness

In contexts where the possibility of a subsequent mass casualty incident is likely, for example in ongoing conflict or an earthquake, the EU must be able to turnaround to allow the rapid reactivation of the mass casualty plan, should it be necessary.

Component 2.

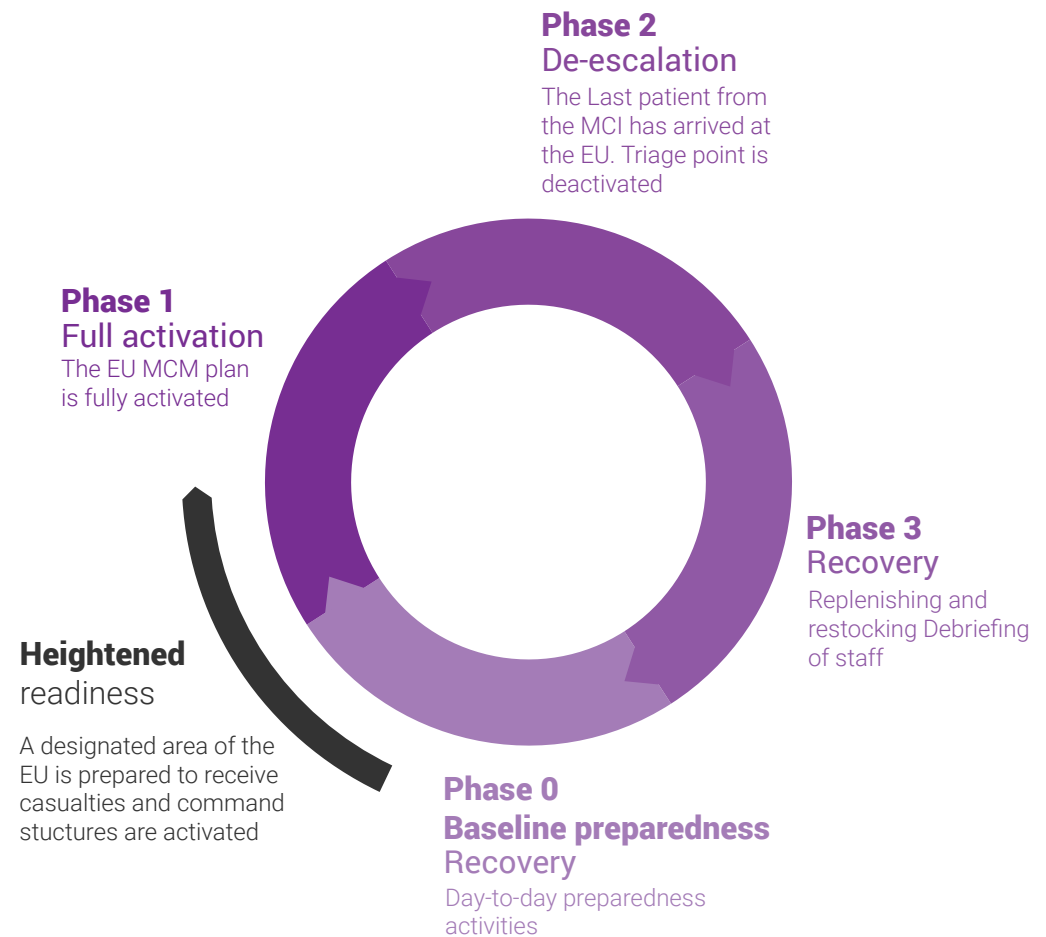
Operational phases of the plan

Heightened readiness

In contexts where there is a continuous threat of an MCI, there is an optional and desirable phase before phase 1, known as heightened readiness. The purpose of heightened readiness is to **prepare the EU to respond to an anticipated event**, whilst ensuring business continuity and minimum disruption of the EU daily routine. Examples of an anticipated event might be a civilian demonstration with potential for violence, a mass pilgrimage or an ongoing low-level conflict with sporadic outbreaks of hostilities.

If at any given point, the resources in the EU become insufficient, then phase 1 should be immediately activated. This is similar to an **MCI “standby”** where the emergency services are still responding to a possible incident and do not yet have enough information to request a full Phase 1 plan activation.

Figure 1. illustrates the three phases of mass casualty response.



Component 2.

Operational phases of the plan

Preparedness activities

Agree on the procedures and thresholds to transition between different phases of the plan

Response activities

Rapidly implement the procedures related to the different phases of the plan

Implementation tips

Establish real time monitoring and feedback system to inform the Incident Command Team (ICT) of arrival, disposition, and number of patients. This will allow the ICT to better identify thresholds.

Questions for consideration

How will your facility be informed about possible incidents?

Is your facility ready to transition to heightened readiness? Under which circumstances?

Who will be responsible for declaring the different phases of the plan?

Special considerations for Emergency Medical Teams

Baseline preparedness occurs before field deployment.

By the nature of their work, once an EMT is deployed, they should assume a "heightened readiness" equivalent mode. Full activation, de-escalation and recovery, apply as in any other health facility

Component 3.

Invest in routine preparedness

Baseline preparedness is an ongoing activity embedded in the daily routine which ensures the EU can respond effectively when necessary. In our unpredictable world, even in high resource settings, activation of the MCM plan may be required when least expected.

Therefore, even in a setting where an MCI is considered unlikely to occur, it is paramount that health facilities, continue to integrate preparedness within routine EU activities and hold routine drills to assess gaps in response capabilities. The Director of the EU should

ensure that the MCM plan is continually assessed and updated.

Examples of activities that should be undertaken as part of the baseline preparedness should include:

Regular assessment and inspection of prepositioned equipment

Assess the functionality of the communication system

Establish transfer relationships with local hospitals and logistics associated with that transfer

Educate and train staff on the mass casualty plan

Frequent drills and simulations

Update contact lists

Orientation and onboarding of new staff

<p>Preparedness activities</p> <p>All activities that ensure readiness for MCI response</p>	<p>Implementation tips</p> <p>Develop a calendar of regular mandatory information / training sessions for EU staff (clinical and non-clinical)</p> <p>Ensure a daily assignment of MCM key roles among EU staff.</p> <p>Consider the use of posters and signage in the EU as a reminder of the MCM plan.</p>	<p>Questions for consideration</p> <p>How to address the problem of EU staff rotation?</p> <p>How often should information/training sessions take place in your facility?</p>	<p>Special considerations for Emergency Medical Teams</p> <p>Baseline preparedness occurs before field deployment as part of the routine activities. Just-in-time preparedness activities should include knowing the deployment circumstances, surrounding EMT's, local structures, in agreement with EMTCC</p>
<p>Response activities</p> <p>Implementation of the plan</p>			

Component 4.

Rehearsal of the mass casualty management plan

MCM response needs to be rehearsed. If the MCM response is not rehearsed on a regular basis its real-time effectiveness will be compromised. Training should ideally

include theoretical educational models, case studies, table-top exercises, in situ and online simulations. However, even in the most resource scarce environments, where such training

opportunities are unlikely to be available, the response should be rehearsed at least once a year and lessons learned should be fed back and incorporated into the plan.

Preparedness activities

All stakeholders should agree on frequency, content, and format of rehearsals. Identifying someone to champion these is crucial.

Response activities

Ensure that the MCM plan is adjusted and updated based on feedback both from rehearsals and/or real activation

Implementation tips

As a full rehearsal may take significant time and divert clinical staff from their daily duties, in small health facilities where health staff resources are limited this may not be a practical option. In such a case, breaking the plan down into sections is a more realistic alternative. This way, the individual sections of the plan can be rehearsed separately, revealing valuable lessons to be learned.

Conducting exercises with no notice to the staff reduces bias and reflects the true surge capacity of preparedness of an organisation. It may be more useful than a typical planned exercises, which is usually highly choreographed.

When rehearsing, consider the use of tools to monitor performance and patient outcomes. Ensure a feedback / lessons learnt mechanisms in place to keep the plan updated

Questions for consideration

How to develop an exercise schedule, covering all the key areas of the MCM plan, while causing minimal disruption to the day-to-day EU operation?

Is the hospital management aware of your rehearsal needs?

Special considerations for Emergency Medical Teams

EMTs should incorporate MCM training as part of their regular drills and exercises

Component 5.

Identify a threshold for activation of the plan

Every health facility needs to agree on the threshold for activation of their specific MCM plan. The threshold for a mass casualty response will vary depending on the health facility and should be agreed upon locally, as part of the preparedness activities. An MCI occurs when the rate of patient presentations exceeds the health system's routine capacity, resulting in a temporary insufficiency in the ability to provide care, either at the prehospital and/or hospital level. This means that many health facilities, particularly large facilities in high-resource settings, may never reach the level of insufficiency that qualifies as an

MCI, yet those in low-resource settings may have to deal with MCIs on a frequent basis. When pre-agreed indicators cross a specific threshold, this represents a trigger point. It can be very challenging to identify useful indicators and triggers. In certain situations, they can be easy to develop (e.g., a single case of well-known infectious disease), but in a mass casualty incident, the triggers would greatly vary across different EUs

The following factors should be considered when the threshold is being determined:

The number and acuity of MCI patients in a defined period

Staffing numbers

Capabilities and skills of staff

Space available for clinical activities

Resources and equipment

Clinical capacity of other areas outside of the EU, such as the operating theatre, laboratory and surgical wards

Preparedness activities

Agree the threshold for the activation of the MCM EU plan

Response activities

Activate the plan early and appropriately

Implementation tips

Always consider the worst-case scenarios.

Upper and lower thresholds should be frequently updated to reflect changes in infrastructure and resources within the facility.

Questions for consideration

What is the usual EU capacity of your facility?

What is the surge capacity of your EU?

What is the current and optimal staff availability?

Do you have suitable internal communication structures to activate the plan optimally?

Are regional and national MCM stakeholders aware of your current thresholds?

Special considerations for Emergency Medical Teams

A deployed EMT is always by default in an "heightened readiness" mode.

Thresholds need to be determined based on EMT capacity and capabilities based on considerations listed above for hospitals

Component 6.

Rapid activation of the plan

The EU MCM plan must be capable of rapid activation. Efficient time management is critical to ensure proper organization and appropriate scalability of the response. All measures should be taken to ensure that the EU response to the mass casualty

incident (MCI) can be activated without delay.

The constitution of a crisis unit, the incident command team, is recommended to ensure the EU MCM management.

The risk of a sub-optimal outcome can be mitigated if an EU over-estimates rather than under-estimates the required response to a potential mass casualty incident. Over-preparedness is preferable to risking failure with under-preparedness.

Preparedness activities

Identify the steps necessary to ensure rapid activation

Response activities

Rapidly activate the plan through the prearranged channels

Implementation tips

Assume a “no-regrets policy”. Better to unnecessarily activate the plan, than to be caught unprepared.

Prompt activation of the plan is crucial. An audible notification system should be in place to mark the activation and transition between phases, but with today’s technology, many other options are available, including those that alert staff not currently on shift.

Questions for consideration

During an MCI, when should you notify the hospital administration?

What other ancillary services should be activated? (Logistics, pastoral, psychological, forensics, lab, OT, wards, media communication?)

During an MCI, when and how should the incident command team be activated?

Special considerations for Emergency Medical Teams

EMTs should activate their MCM plan as per their pre-determined activation triggers

Component 7.

Legal protection of staff and ethical considerations

In a mass casualty situation, the MCM plan should outline specific legal protections for health workers when an MCI occurs, as well as behaviours that are unacceptable and expose the

health workers to legal risk. The MCM plan should include information for both national health workers and embedded internationals working in the facility

The medico-legal and ethical framework for clinical practice during a mass casualty response should also be highlighted in the mass casualty plan.

Preparedness activities

Crisis standards of care should be made clear ahead of time for different types of MCI.

Preparedness activities should include the clarification of medico-legal and ethical framework for clinical staff interventions during the MCI.

Determine at what threshold these standard operating procedures would be activated so that clinical decision making is common amongst staff

Response activities

Clinical staff should act within the pre-approved medico-legal framework

Implementation tips

Consult with the hospital ethical committee to get clear guidance regarding sensitive topics such as: clinical policies for dying patients, declaration of death, access to medical records by authorities, informed consent, priorities for treatment, unaccompanied minors, etc.

Where available consult national and/or regional healthcare legislative bodies and authorities for guidance on clinical practice during MCI

Questions for consideration

What are the specific laws in your environment?

MCIs generate situations that are uncommon on day-to-day operations. Consider how would your system react to the following examples:

One of the perpetrators of a terrorist attack was seriously injured by the police and brought into the EU. What should be done?

The relatives of one of the patients are high ranking military officers; they insist on their relative being treated first even though he was triaged green. What should be done?

During the MCI, a patient with a penetrating chest injury went into cardiac arrest as he was being assessed. What is the most appropriate thing to do?

There will be times when a patient is unable to consent to a life or limb-saving procedure. How should you proceed?

Special considerations for Emergency Medical Teams

For international EMTs this might also include the temporary authorization to practice.

Please refer to the Blue Book & Red Book for additional references.

Component 8.

Crowd Control

External crowd control

External crowd control mechanisms should be in place in the immediate vicinity of the health facility (for persons and vehicles). External crowds within the compound of the health facility must be controlled before the response can be effectively and safely implemented. Effective external crowd control must immediately ensure that private vehicles do not gain access to the EU perimeter (except if transporting patients). An adequate number of

security personnel is essential to maintain crowd control. It is essential that crowd control and security is incorporated in the mass casualty plan and rehearsal.

As security and crowd control is central to an effective mass casualty response, it will be necessary to use whatever means are locally available. Particularly in low-resource settings, the demands on the security personnel can be

reduced through community education and engagement to dissuade bystanders and the worried well from overwhelming the hospital during a mass casualty incident. Low-cost solutions including minor structural alterations to the health facility compound to enhance crowd control (for example building fences and closing-off gates) should be considered as a part of the planning phase.

Component 8.

Crowd Control

External crowd control

Preparedness activities

Ensure adequate number of security personnel will be made rapidly available in the event of an MCI

Ensure security personnel are adequately trained and aware of their roles during an MCI

Ensure the existence of a dedicated security management structure

Identify structural changes to the health facility which will enhance crowd control

Make structural changes as indicated

Response activities

Early and rapid mobilisation of security personnel to pre-identified positions and roles.

Evaluation during the response of whether crowd control measures are adequate and effective.

Implementation tips

As part of crowd-control strategy, consider using local media to discourage bystanders from coming to the hospital.

Make sure the security staff see themselves as part of the plan and own the responsibility, but also ensure that they understand the need for empathy and fairness

Consider adding physical barriers and signage to facilitate crowd control

Consider cooperating with the police and military

Questions for consideration

What steps should you take to ensure crowd control in your facility?

Special considerations for Emergency Medical Teams

EMTs should ensure that there is capacity within the team to designate personnel to manage external crowds

Component 8.

Crowd Control

Internal crowd control

During an MCI, only pre-approved rostered staff should be allowed in designated response zones unless otherwise requested by the incident command team. Internal crowd control also applies to volunteers and staff wanting to participate in the response. Large numbers of voluntary personnel and non-rostered staff arriving in the EU intending to help, can lead to confusion and the breakdown of communication.

Hospital staff should be requested not to rush to the EU. Security can be stationed at the internal entrance to the EU from the hospital. Volunteers and non-rostered staff should be directed to a predesignated pooling area where management can assign them to areas of need.

Only patients and staff should be allowed in designated response zones, except for pre-agreed

exceptions, for example a carer accompanying a minor, a pregnant woman, or a hearing or sight impaired patient. Internal crowding has several undesirable consequences. It impacts adversely on staff communication and engenders an atmosphere of chaos. In addition, it compromises patient privacy and confidentiality, and may create difficulties in delivering patient care.

Component 8.

Crowd Control

Internal crowd control

Preparedness activities

Agree on the exceptions for internal crowd control

Identify an area where additional staff and volunteers can be assembled prior to deployment.

Identify the focal point for overseeing the deployment of additional staff and/or volunteer

Response activities

Position security personnel to ensure that pre-agreed crowd control measures can be implemented

Ensure that only officially deployed staff are allowed into clinical areas

Assemble additional staff and volunteers at the pre-identified area, ideally away from the clinical areas

Implementation tips

Create a roster of staff from other departments that would like to participate in the MCM response. Train them and keep them updated on the plan.

Allocate a physical space for pooled staff away from the EU to avoid crowding and ensure that they can be kept informed throughout the response

Questions for consideration

How would you ensure that the appropriate staff as required are able to access the EU?

What is the criteria for staff volunteering from other hospitals as part of the MCI response?

How will you ensure that staff currently waiting in the staff-pooling area can be mobilized?

Special considerations for Emergency Medical Teams

Internal crowd control only applies to facilities where surge staff is available. Deployed EMTs need to rely on all the existing staff in order to respond to an MCI.

Component 9.

Staff and patient safety

Ensure adequate protocols are in place for safety of patients and staff. It is of critical importance that both civilian and military personnel with weapons are forbidden to enter the EU. Weapons should be removed from patients before any clinical care can be provided. Provision should be made for secure storage of any weapons and

ammunition. Security officials from other areas of the health facility may be called to support these measures.

There may be incidents, for example terrorist attacks, where armed security personnel may be required in the facility to protect staff and patients.

Since security protocols are not standardized and vary according to the context, up to date generic guidance can be found in “The Red Book – A guidance document for medical teams responding to health emergencies in armed conflicts and other insecure environments”.

Preparedness activities

Signage – “Weapons free facility”

Provision should be made for secure storage of any weapons and ammunition.

Security personnel must be trained to safely disarm anybody entering the hospital, unless they are an exception

Response activities

Position security personnel to ensure staff and patient safety

Implementation tips

Identify a safe secure area for weapon storage

Putting a sign at the entrance informing weapons are not accepted

Ensure an appropriate safety protocol for the EU including lockdown of EU where required.

Upon activation of the MCM plan, check that all EU staff are identifiable

Questions for consideration

Is your security staff trained to check patients for weapons?

Where would the weapons be stored?

Does your facility have an active shooter protocol in place?

Special considerations for Emergency Medical Teams

Please refer to the Red Book for additional references.

Component 10.

Supplies

Medical supplies should be positioned for easy accessibility. Most of the supplies needed to manage an MCI are used routinely on a day-to-day basis in EUs. However, during an MCI, these supplies will quickly deplete, therefore, preparedness planning must include the prepositioning of surge supplies at accessible locations.

Access to supplies cannot depend on the presence of only one staff member. During preparedness these supplies should be securely stored near, or in the EU, and labelled with the contents, quantity, and expiration dates.

Prepositioned medical supplies should be regularly inspected and maintained. These supply lists should be regularly reviewed to ensure

that stock can be switched out before expiry. Whenever possible, MCI supplies should be maintained as a part of the usual hospital supply.

A mass casualty response is not the time or place to introduce novel equipment or procedures. As far as possible, routine equipment and protocols should be used to ensure staff familiarity.

Preparedness activities

Identify necessary supplies and ensure adequate quantity is held in reserve.

Run routine quality control checks

Response activities

Ensure that the designated focal point for supplies rapidly equips the clinical areas and ensures that adequate levels of supplies are maintained throughout the response

Implementation tips

Pre-positioned supplies close to expiration should be used and immediately replaced by new supplies with longer expiration dates.

When designating the person or persons responsible for checking pre-positioned supplies on a regular basis, start by considering EU Head nurses, Pharmacists and Logisticians

Involve the companies already providing supplies/ sterilisation of equipment in a plan for active support of the supply chain in the event of an MCI

Questions for consideration

What type of supplies and equipment should the following kits contain and where should they be stored?

Clinical Kits

- Green zone kit
- Red zone kit

Operational / Admin support Kits

- MCM kit
- Triage kit

Special considerations for Emergency Medical Teams

International EMTs are limited by the volume and weight of their cargo. Adding additional kits to their cargo manifest may not be feasible.

However, and since most of the components of these kits are day-to-day consumables and supplies, a possible strategy would be to consider the early mobilization of stored consumables and supplies from the storage area, in order to assemble the necessary kits, and keep them in easy access locations, as a ready-to-use resource after arriving to the deployment.

Component 11.

Communication

Internal communication system

Clear communication channels are necessary throughout the health facility, and also with other facilities. The EU must communicate additional resource needs with a designated health facility command centre, which in a low resource setting may be within the EU itself. This will help facilitate the process of allocating operating theatres, surgical beds, laboratory and other facilities.

In some settings the communication system might be within a designated command centre with allocated staff and communication channels, whereas in low resource settings, this may take a more informal form, such as runners or paper notes.

Back-up internal communication system

It is recognized that routine communications may break down during an event. This could be for several reasons, for example, in a conflict setting, communication infrastructures might be deliberately targeted or more basic systems could simply collapse under the weight of increased demand within the civilian community. There should, therefore, be provision for an alternative communications system that is routinely checked and ready for use as part of baseline preparedness

Wider communication

The EU should be able to communicate its functional capacity, including the ability to receive and treat further casualties. This updated status needs to be shared with all components of the care pathway, for example pre-hospital providers, hospital administration, and other hospitals.

Component 11.

Communication

Preparedness activities

At baseline preparedness, the different levels of information need to be properly mapped and planned.

There needs to be a clear understanding of who is doing what, how is the information being interpreted and analysed, and which communication channels will be used to ensure smooth information flow.

Identify and equip the EU with necessary back-up communication system

Ensure that all areas of the hospital are aware of their potential role in the MC response

Identify mechanisms of communication across the hospital and include those in mass casualty rehearsals

Ensure that the designated focal point for communication is aware of the need and process for wider communication with prehospital, hospital administration and other hospitals

Response activities

Upon activation of the MC response, ensure the back-up system can be accessed if required

Notify the respective chain of command upon activation of the MCI and ensure bidirectional flow of information throughout the response

Implementation tips

If radios are considered as the alternative communication option, ensure all staff are trained in radio-communication technique and etiquette.

Time and time again, communication is one of the biggest breakdowns in a mass casualty incident response. To help address this, you can try to reduce the amount of radio traffic you contribute.

It's important to recall that for a given radio channel only one person at a time can speak.

Before you talk, think what you're going to say, and make sure it is necessary. And if it does not help someone do their job, do not talk. If you must, keep it short and to the point.

Device identifiers and numbers should be documented in advance and available as quick reference during the MCI.

Questions for consideration

Your communication system/mobile phones are no longer functioning, the signal is down. Which procedures should be followed in order to activate the backup communication system?

How do you ensure that your external communication channels are up and running?

How to ensure appropriate use of the command chain during internal communications?

Special considerations for Emergency Medical Teams

EMTs usually include internal communication systems as part of their operational deployments.

External communications should be coordinated with the established coordination mechanism.

Component 12.

Ensure the safe movement of patients

Patient flow is an important component of the mass casualty response and must not be overlooked in the mass casualty plan. When patient movement is necessary, steps should be taken to develop a continuous one-way patient flow system. This system begins at the health facility entrance, continuing through the EU to reach the patients' referral destinations. As part of the mass casualty plan, potential bottlenecks should be identified, and steps taken to mitigate the risk.

Some health facilities will have the resources and design to enable diagnostic investigations to be performed within the EU. However, in most settings where this is not possible, patient movement should be minimized during the MCM response.

The functional mandate of the EU during the MCI, is limited to priority bedside interventions, including point of care diagnostic evaluations, critical interventions and resuscitation.

Critically ill patients should not be moved to isolated parts of the hospital for diagnostic, laboratory, and imaging tests, except in circumstances where it is absolutely necessary. If this is unavoidable, patients must be accompanied and not just sent with a noni-medical person such as a porter.

Component 12.

Ensure the safe movement of patients

Preparedness activities

Identify a practical patient flow pathway to be implemented during an MCI

Make the necessary changes in the EU and, if possible, the health facility, to ensure unidirectional patient flow

Identify and develop patient care techniques to minimise the need to move the patient around the facility, for example purchasing bedside diagnostic equipment, and increasing staff awareness of the risks to patients being moved out of critical care areas.

Response activities

Implement the pre-agreed unidirectional flow plan
Ensure clinical guidelines are followed during the MCM response to minimise patient movement

Implementation tips

Consider the establishment of a designated transport team responsible for transporting patients from the triage point to the red zone and from there to their final destinations. These teams usually consist of stretcher-bearers, vetted volunteers, or non-essential hospital staff.

Signs and color-coded arrows painted on the walls or floors can be used as visuals to help direct transport team to the correct locations.

Consider liaising with other departments to assist in patient flow – for example, using staff from other departments to assist on the transportation of patients from the EU to their final destinations. This strategy also contributes to better manage the scarce EU resources.

Remember to plan for a vehicle one way flow system, as well as the one for patients.

Questions for consideration

When the MCM plan is activated, where should transfer of arriving patients to the hospital stretchers/gurneys happen?

Who should manage the stretcher bearers? Do you have enough?

Who should accompany patients during movements (and which patients)?

How will external transfers be managed?

When possible, how to ensure diversion of non-MCI related patients?

Special considerations for Emergency Medical Teams

When deploying to the field, EMTs should consider a layout plan that is suitable for MCM, including unidirectional flow and expansion areas.

Component 13.

Infection prevention control

Infection prevention control should be seen as integral to the mass casualty training and response. There should be personal protective equipment, running water, soap, disinfectants, and suitable infection prevention control training to protect staff from potentially contagious pathogens.

In addition, in certain settings a health facility may need the capability to deal with trauma complicated by biological, chemical, or radiological contamination. These preparedness and response activities are dependent on local risk analysis and capability.

Preparedness activities

Ensure appropriate PPE is available to all staff responding to an MCI

As part of baseline preparedness activities, conduct relevant IPC training for all staff responding to an MCI.

If your risk analysis justifies, organize training for the management of patients contaminated by a chemical or radiological agent (assisted- and self-decontamination as well as in-depth decontamination)

Response activities

Ensure IPC and PPE protocols are followed during the response

Implementation tips

Additional PPE equipment for the staff should be included in the different supply kits based on hazard vulnerability assessment.

Installing a shower system outside of the EU is a simple step towards decontamination capacity. This should be incorporated into the hospital preparedness planning discussion based on hazard vulnerability assessment.

Consider developing information / training sessions on warning signs for CBRN. Awareness of warning signs would be for all first contact staff including security.

Questions for consideration

Your hospital never developed a plan for chemical incidents, but now the EU MCM plan has been activated and some of the arriving patients are probably contaminated by a chemical agent. What should you do?

In the event of an MCI where patients are probably contaminated by a chemical agent, where should assisted- and self-decontamination occur?
Is a care area for infected or contaminated patients identified?

Are there any staff exposure protocols in place?

Special considerations for Emergency Medical Teams

A pre-deployment risk analysis will determine the type of PPE that needs to be used as well as the need to carry extra tents for decontamination procedures.

Component 14.

Patient documentation and tracking

The EU must have non-sequentially numbered, pre-prepared MCM patient files and folders to ensure proper data collection and documentation. If you use an electronic system, these patient's numbers need to be added in advance. There must be a clear standardized form and patient notes that should integrate with the existing

hospital record system. As a good practice, consider the integration of the MCI adapted trauma care checklist.

This should be complemented by an appropriate patient identification and tracking mechanism. This is important not only for the efficient

management of patient flow and resource allocation, but also for updating families with regards to patient status and auditing outcomes. This can be achieved by adding ID stickers or tags or bracelets to the pre-prepared patient folders.

Preparedness activities

- Design and agree upon prepared MCM patient files
- Ensure that staff are aware of their responsibilities towards record keeping and are familiar with the system to be implemented during an MCM response
- Agree upon an appropriate identification system that allows the patient to be tracked throughout the patient care pathway

Response activities

- Ensure that the correct patient record system is utilised throughout the response
- Ensure that the patient identification and tracking system is initiated on arrival of the patient to the health facility

Implementation tips

- If possible, the tracking of patients should start at the scene and continue until the patient is discharged.
- If you use a digital patient's record on a day-to-day basis, consider the pre-addition of a certain number of blank records that can be used during an MCI
- Positioning admin staff at the entrance / exit of the treatment areas, facilitates patient tracking. These checkpoints will ensure proper patient tracking.
- Consider the type of forms that go into your MCM patient's file.
- Identifying victims and reuniting them with family is an important step that hospitals will struggle with, after an MCI. This is especially true when minors or patients who cannot speak for themselves are involved.

Questions for consideration

- Is your current patient's information system adequate for MCM? Does it link pre-hospital records with hospital records?
- Is there a patient tracking system already in place that can be used?
- Is there a backup system in case you are using electronic patient records?

Special considerations for Emergency Medical Teams

By default, EMTs should use patient's forms and tracking systems that are suitable for MCM .

Component 15.

Patient's dignity, privacy and confidentiality

Patients' rights to dignity, privacy, confidentiality, safety and informed consent need to be respected in the context in which the mass casualty is occurring. Security concerns may dictate the level of confidentiality that can be achieved.

Additional challenges may present in contexts where sex separation is non-negotiable.

Preparedness activities

Identify necessary structural and procedural changes that can be made to optimise patient privacy and confidentiality.

Response activities

Ensure staff respect patient confidentiality and privacy to the maximum of their ability during the MCM response

Implementation tips

Bed-side curtains are an easy way to ensure privacy.

Aspire to have clinicians of both sex providing patient care.

Consider operational options for informed consent for unconscious patients and minors.

Questions for consideration

What cultural or legal aspects are relevant in your local situation?

How would you address privacy aspects during a mass casualty situation when the EU is overcrowded?

How would you make allowance for appropriate spaces for vulnerable populations?

Special considerations for Emergency Medical Teams

Same principles apply to EMTs

Component 16.

Triage

Triage during an MCI differs from daily triage. It adopts a simplified, utilitarian approach in order to maximise the impact of limited resources on patient outcomes. See figure 4.

Irrespective of the triage tool employed, there will be two stages to the process: **Step 1 and Step 2**. Figure 5 illustrates the proposed interagency integrated triage tool for mass casualty.

Step 1 hospital triage - should be based on walking and non-walking status to identify those who would most benefit from immediate medical intervention and to facilitate Step 2 triage.

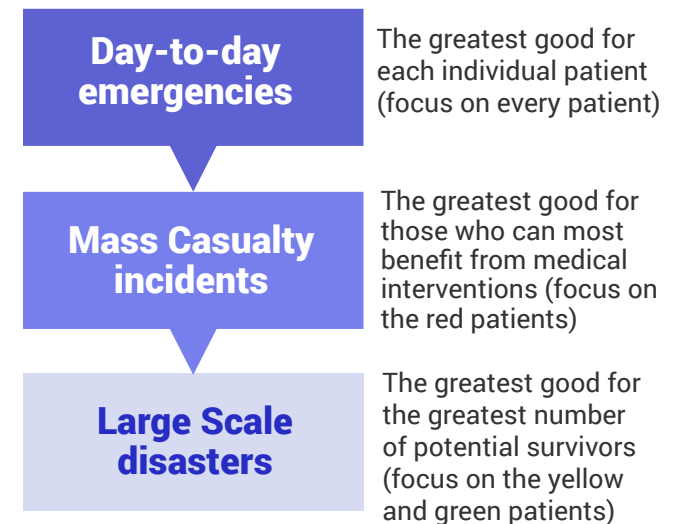
It is important to remember that walking patients may have severe, life-threatening injuries that can develop over time. Therefore, Step 2 triage and repeated reassessment is vital to monitor patients for deterioration. Although clinical experience is an advantage, in some situations where resources are limited, or where the cultural context allows, even non-health workers could be trained to perform Step 1 triage.

After Step 1, **Step 2** triage will be performed on

all patients, as triage should be considered a continuous and dynamic process. In the Red Zone, Step 2 triage happens after resuscitation of the patient. **Step 2 triage** requires advanced clinical knowledge and competencies, and therefore, should be performed by clinicians.

In the Green Zone, patients should be re-triaged using the standard day-to day triage tool used at the facility

In a non-MCI setting, triage is performed inside the EU, either in the admission area or immediately after admission in a dedicated triage space. During an MCI, the exact location of the triage point may vary among different health facilities, but there are general principles of practice that should be applied in allocating the triage points. These principles should include the designation of the **Step 1 triage point** external and adjacent to the EU entrance in an area that can be safe and secure during any event. As good practice, a triage point should be clearly marked, and defined boundaries should connect it to the EU entrance to ensure an easily identifiable pathway.



Component 16.

Triage

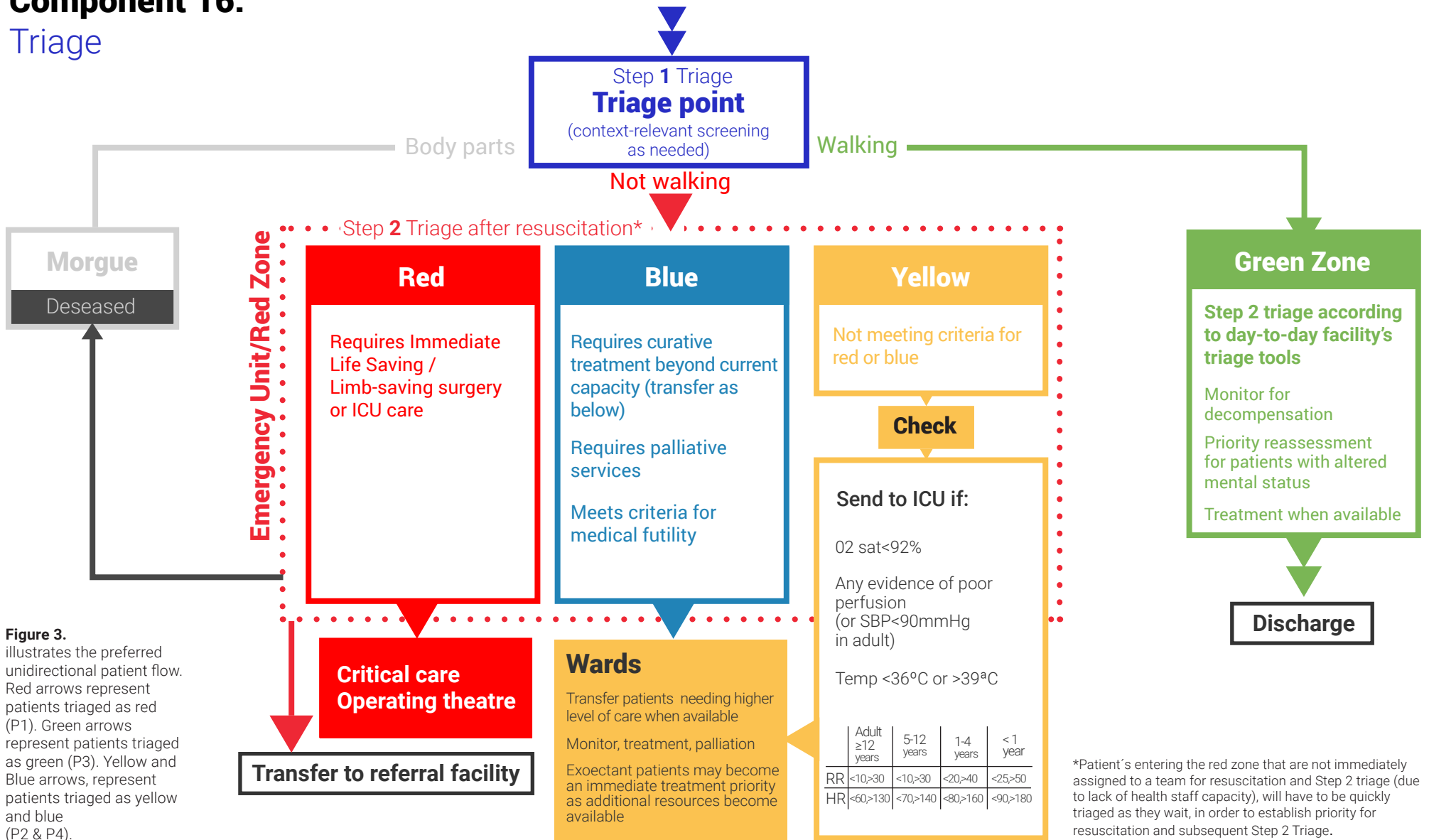


Figure 3. illustrates the preferred unidirectional patient flow. Red arrows represent patients triaged as red (P1). Green arrows represent patients triaged as green (P3). Yellow and Blue arrows, represent patients triaged as yellow and blue (P2 & P4).

Component 16.

Triage

Preparedness activities

- Agree on which triage systems to be used for surge.
- Identify a location for Step 1 triage during an MCI
- Ensure that all staff understand the utilitarian necessity of MCI triage
- Ensure relevant staff members are trained in the triage techniques
- Identify which members of staff will conduct Step 1 triage
- Ensure equipment and materials for conducting Step 2 triage are readily accessible

Response activities

- Conduct Step 1 triage in the previously identified location.
- Ensure identified staff commence Step 1 and Step 2 triage, appropriately equipped in the predetermined areas of the health facility

Implementation tips

The triage categories are not considered rigid, and there are times where one patient may fall between two categories, in which case the patient should be classified with the highest priority between the two categories.

Ensure your staff is aware of the triage system in use at any given time.

All unresponsive patients, even those presumed dead, should be triaged as non-walking.

Questions for consideration

Where should you set up the Step 1 triage point?

Who should be the Step 1 triage officer?

After Step 2 triage, where should yellow patients be sent?

After Step 2 triage, where should blue patients be sent?

Special considerations for Emergency Medical Teams

Step 1 triage and Step 2 triage fully apply to deployed EMTs dealing with an MCI. All patients beyond the EMT capacity and capability should be transferred to a referral facility as soon as possible.

Component 17.

Clinical Zones

Red zone

Irrespective of the triage systems in place, patients with minor injuries should be excluded from the EU, which must be reserved for moderate and severe cases. This means that all or part of the EU should be repurposed to become the non-walking zone, otherwise referred to as the red zone.

Step 2 triage performed within this zone will further categorize the patients, for example, to red yellow or blue.

The group of patients initially triaged as non-walking, after resuscitation will fall into four broad sub-categories:

- 1. An immediate group of patients in need of resuscitation and immediate life and limb saving intervention – Red (P1)**
- 2. Patients assessed as requiring treatment but who can wait and could be moved to another part of the health facility – Yellow (P2)**
- 3. Patients that are assessed as expectant, because the care they require is above the current available resources. They should be moved to a specific care area, away from the main clinical area where they can be given palliative care and be regularly reassessed. If resource levels improve, these patients may change from expectant to immediate resuscitation – Blue (P4)**
- 4. Dead patients that should be moved to the morgue, as soon as possible - Grey**

Component 17.

Clinical Zones

Red zone

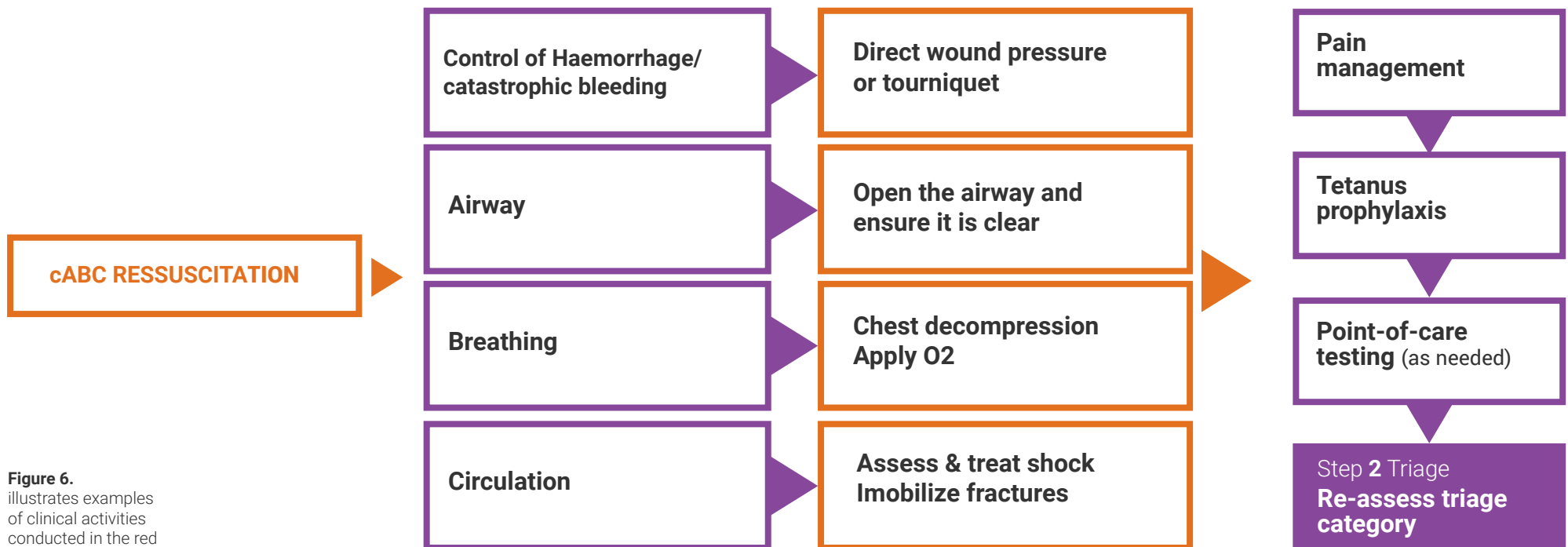


Figure 6. illustrates examples of clinical activities conducted in the red zone

Component 17.

Clinical Zones

Red zone

Preparedness activities

Decide how the EU will be converted to be used as the red zone

Identify necessary supplies and equipment for the creation of the red zone

Response activities

Identify and safely relocate (if possible) existing EU patients.

Clinical treatment as indicated and Step 2 triage

Implementation tips

Immediate evacuation of the Emergency Unit is a critical step to ensure there is enough space to receive new patients. Consider the protocol for evacuation in case of fire inside the Emergency Unit and adapt to MCM.

Managing staff in the red zone requires a coordinated and pre-agreed approach. Different options are available. Examples include:

The “pit-stop” approach:

Each team is assigned a bed and waits for its patient to arrive. Once stabilized, the patient is moved to his/her final destination and the team waits for the next patient.

The “mobile team” approach:

Each team starts in an occupied bed. Once stabilized, the patient is moved to his/her final destination and the team moves to the next occupied bed. This approach maybe better suited for low-resource settings as the number of patients arriving may quickly overcome the number of available teams.

Regardless of the chosen approach, whenever patients continue entering the Red Zone and no team is immediately available to manage them, it is a good practice to assign someone to prioritize these new patients, ensuring that the first available team, will take the most serious patient first.

Questions for consideration

Is there a nearby area where you can place the patients being evacuated from the Emergency Unit? This would be a transfer area where patients would be collected by staff from other departments.

What kind of procedures would you undertake in the red zone?

How should the clinical lead prioritize patients for OT and ICU?

Who is responsible to assemble teams of doctors and nurses in the red zone?

What additional training would you require for the medical teams working the Red Zone?

What is the plan with caring for non-walking patients who may be discharged from the EU due to injuries that do not require any kind of surgical intervention?

Special considerations for Emergency Medical Teams

Same principles apply

Component 17.

Clinical Zones

Green zone

Irrespective of the triage system, there must be a green zone for managing walking patients. The function of this zone is to provide clinical care to patients with a higher likelihood of non-time-critical and non-life-threatening injuries (Green/ P3).

The green zone should be adjacent to, but distinct from, the health facility's EU. In many mass casualty situations, green zone patients are likely to be most of the cohort. It is therefore preferable to have a designated space, ideally outside the EU to accommodate them. In low or middle-resource settings, the green zone might be established using a temporary shelter.

There must be an awareness that the condition of a patient in the green zone can rapidly deteriorate, necessitating emergency intervention. There should, therefore, be at least one experienced clinical staff member available for the green zone. And, because of this, the green zone should be located as to ensure the rapid transfer of patients re-triaged as immediate

Preparedness activities

Decide where and how the green zone will be established

Designate staff who will work in the green zone
Identify necessary supplies and equipment for the creation of the green zone

Response activities

Deploy designated staff to the green zone

Conduct clinical treatment as indicated and continuous clinical observation in order to detect a possible deterioration in patient condition, necessitating a re-categorisation of the patient

Implementation tips

In order to ensure that patients in the green zone keep flowing, different approaches can be put into place. Examples include:

The "conveyor belt" approach

Patients entering the green zone move from one treatment station to another until being discharged. Examples of treatment stations are: re-triage, wound dressing, ENT examination, orthopaedic examination, psychosocial support, oxygen therapy, discharge station.

The "mobile team" approach

Patients are assessed by clinical providers that move from patient to patient until all patients are assessed treated and discharged.

Consider an expedite system for quick discharge and follow-up.

Questions for consideration

What kind of procedures would be undertaken in a green zone?

Where should the green zone be placed on the hospital grounds?

Who should be allowed inside the green zone?

A patient in the Green Zone is suddenly deteriorating and became unconscious. What are the necessary steps to get him/her into the Red Zone?

In your context, who should be staffing the green zone? Is that dependent on the hour of the day?

Special considerations for Emergency Medical Teams

Despite the space limitations, clinical zones are fully applicable to deployed EMTs. In most cases, the Green Zone will have to be created outside of the main facility in an expansion area.

Component 18.

Incident command team

There should be a designated and agreed minimum EU incident command team overseeing the EU response:

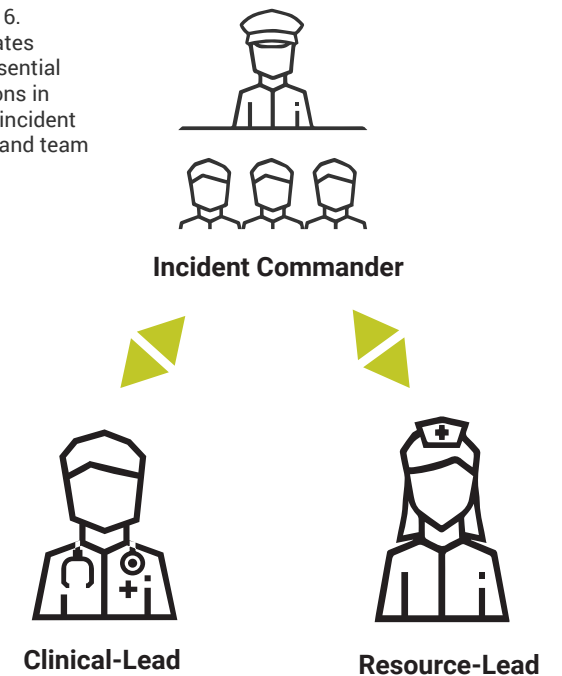
Incident Commander

Clinical Lead

Resource Lead

The EU incident command team should manage the overall incident and is typically led by the EU director. Patient clinical care is the responsibility of the Clinical Lead. The management of supplies is the responsibility of the Resource Lead. Security and Maintenance should be the responsibility of the health facility, however in some low-resource settings this may also fall under the responsibility of the EU.

Figure 6. Illustrates the essential positions in an EU incident command team



Component 18.

Incident command team

Preparedness activities

Identify the incident command team and ensure they are familiar with their roles

Response activities

Immediate activation of the incident command team

Implementation tips

When developing your plan, avoid identifying the ICT members by specific person, but rather by the generic role. It is important to ensure that in the absence of a member, there is always an acting person with the same role.

On a daily basis ensure that there is a defined ICT team in every EU shift.

Questions for consideration

How will the incident command team oversee the overall plan activation and implementation?

To whom can the Resource Lead delegate tasks?

Who will be responsible for evacuating patients from the EU

To whom does the Incident Commander report to?

Special considerations for Emergency Medical Teams

Due to its operational design, and unlike many other health facilities, the EMT command structure is already designed by default. Leadership, Clinical Lead, Logistics and Security are well identified. However, due to its staff number limitations, these positions most probably will be hands-on, and no surge support is expected to arrive from outside the EMT.

Each EMT should have its own ICT set up for a possible MCI

Component 19.

Clearly defined roles and staff visibility

Pocket or digital action cards should be provided to each health worker, listing their expected duties during the different phases of the response. This helps to clarify roles and responsibilities. The action cards should not be specific to an individual but rather specific to a role, this allows for flexibility in staffing allocation, particularly in

overcoming issues of unplanned staff absence. When the MCM plan is activated every staff member in the EU should have an action card.

It is recommended that essential personnel should wear high-visibility vests corresponding to their area of work with clearly labelled roles.

This allows them to be easily identified, facilitates internal crowd control, and contributes to improved internal communication. For the same reason, staff should have their name clearly displayed, however, in some situations where there are security concerns, this may not be practical.

Preparedness activities

Prepare action cards listing respective duties of staff during an MCI

Ensure staff are fully aware of their possible roles

Prepare staff ID vests

Response activities

Distribute the action cards to staff according to their pre-assigned roles

Distribute ID vests to all members of staff involved in the response

Implementation tips

There are several options for distributing action cards.

One option is to ensure that on a day-to-day basis, essential personnel is assigned a role and a corresponding "action card" to be used in the event of an MCI. Since action cards are role based and not individual based, at the end of everyone's shift, the role can be transmitted to the next one that takes over the position. This strategy may be more suited for health facilities that frequently face MCIs.

A second option is to distribute the action cards upon activation of the plan.

Action cards and coloured vests can be stored in the EU MCM kit.

Questions for consideration

What information should the various Action Cards contain?

What will be the strategy for distributing the action cards?

What action cards can be combined if there are staff shortages?

Special considerations for Emergency Medical Teams

EMTs are encouraged to use uniforms and/or vests highlighting the staff roles EMT.

Component 20.

Staff surge support

It is essential to consider human resource surge support from other departments to assist in the MCM response. Since routine teaching of basic emergency care is not usual across many settings, training programmes for health staff from non-EU departments should be established.

These programmes will enable them to work outside their normal roles during a mass casualty response. In addition, new EU staff members should be familiarized with the MCM plan at the start of their employment. In small or low-resource facilities, a possible solution is regular rotation of hospital staff through the EU.

Whilst in most facilities it would be unrealistic to expect all potential volunteers to be familiar with specific roles in the EU, they should at least be familiar with the EU MCM plan and have some idea of the roles they may potentially be asked to fill.

Preparedness activities

Identify staff who could be recruited from areas of the health facility and community not directly involved in the MCM response

Designate pre-assigned roles to surge staff, aligned as much as possible with their pre-existing clinical skills and knowledge

Ensure that all potential additional staff are familiar with the MC plan and have rehearsed.

Conduct necessary training for the selected individuals. Surge staff should undergo Basic Emergency Care training and be included in the EU exercises.

Surge staff would also need to be trained and drilled at least once per year, and rosters should be reviewed regularly to account for staff moves and transfers.

Response activities

Activate the call for surge support if the need is anticipated

Clearly allocate responsibilities to staff and volunteers based on ability and demand

Activation of the pooling area for surge staff

Implementation tips

When planning to use surge staff, take into consideration that the MCI may continue for 24 hours or longer, and staff rest and rotation must be part of the plan. Do not use all your human resources in one go at the start.

Some hospitals promote internal exchange programmes, allowing staff from different departments to spend some time every year in the EU. These programmes are an important component of surge staff preparation.

Plan taking into consideration that 30% of your emergency call-in roster will not be available. Also remember to plan so that call-in-staff can get pass security and have a parking spot, if they come by car.

When volunteer staff are not familiar with EU set up or practice, then they may be assigned to clinical teams that work routinely in the EU.

Questions for consideration

If there is a surge of hospital staff that turn up to your EU to provide support, what will be the strategy to optimize these new resources?

How to manage volunteers? What roles can be assigned to volunteers?

How to plan for continuity of care scheduling?

Special considerations for Emergency Medical Teams

Due to its staff number limitations no additional support is expected to arrive from outside the EMT. A plan may be in place to use local available health staff and volunteers as long as their credentials are vetted. This should be done in conjunction with local health system and EMTCC

Component 21.

Management of the dead

As part of the mass casualty plan, the health care facility must prepare for the management of the dead by:

Ensuring that all medical staff are aware of the necessary clinical criteria to declare end of life

Identifying appropriate mechanism and route to move human remains from the EU to the morgue, minimising exposure to other patients

Identifying need and area for morgue

Being mindful of the cultural and forensic requirements for the handling of human remains

Expansion ensuring adequate supplies (body bags, tags) for the safe and dignified handling of human remains

Preparedness activities

Identify an area for morgue expansion

Ensure adequate supplies (body bags, tags) for the safe and dignified handling of human remains

Identify appropriate mechanism and route to move human remains from the EU to the morgue, minimising exposure to other patients

Ensure proper mechanism for the preservation of forensic evidence

Response activities

Ensure activation of the temporary morgue if needed

Allocate staff whose duties will include the transfer of deceased to the morgue

Implementation tips

Be aware of local regulations and cultural sensitivity regarding declaration of death. Step 1 triage (walking vs non-walking) is not the ideal place to declare death.

Body parts, however, should be directly taken to the morgue, bypassing the red zone.

Questions for consideration

Should the relatives be allowed to remove the dead directly from the Red Zone?

What kind of handover protocols are in place?

How is forensic evidence being preserved?

Is there a protocol in place to allow family members to identify dead bodies?

Special considerations for Emergency Medical Teams

Deployed EMTs should follow local regulations concerning the management of the dead. The EMT MCM plan, needs to consider a makeshift morgue to hold bodies until handover to families or authorities

Component 22.

Managing the media

Media communication

Health facilities should consider preparing a communication package for media, social media, and authorities. A pre-prepared communication

package with standardized messages (press-releases, tweets, etc) should be prepared in advance in order to keep external stakeholders

informed of the ongoing situation. Having a point person trained in media communications is helpful.

Preparedness activities

Pre-plan a communication package/ message for the media with standardised messages

Designate the focal point in charge of communication with the media

Response activities

Communicate with the media to relay key messaging during the MCI response, as appropriate

Implementation tips

Consider testing the communication package system as part of the MCM exercises, including an additional text: "Exercise, Exercise, Exercise"

All staff must be educated about the inappropriateness of speaking to the media directly or using personal social media during an MCM. Staff should refer to primary media focal point.

Questions for

What kind of media communication channels are currently available in your facility, and how to use them ?

Special considerations for Emergency Medical Teams

Media management during an MCI when an EMT is deployed should be led by the local health authorities. EMTs should not engage directly with media

Component 22.

Managing the media

Media access

The media can play an important role in disseminating information to the general community; however, they should not be

given unsupervised access to clinical areas. They should be allocated a designated space, some distance from the EU. Ensure the EU

communication point person instructs the media regarding patient dignity, privacy, and confidentiality.

Preparedness activities

Ensure that security personnel are aware that media should not have unsupervised access to the hospital

Identify a location in the hospital, for the media, to which they can be directed

Response activities

Communicate with the media to relay key messaging during the MCI response, as appropriate

Implementation tips

Organizing media briefings / press releases at regular intervals is a good way to avoid the constant pressure of journalists and reporters.

Questions for consideration

Is there a media centre in the facility?

How often should you be updating the media?

How would your facility manage VIP visits with attached media?

Special considerations for Emergency Medical Teams

Same principles apply to EMTs as for fixed Health Facilities

Component 23.

Caring for family members

It is important and respectful to keep family members engaged and updated. There is a need to establish a designated family area, away from the EU, with support staff, for example a nurse, social worker, or mental health specialist. In a

resource limited environment, consider the use of volunteers, hospital admin staff or allied health workers, including rehabilitation specialists and pharmacy staff, who may not have a direct role in response.

Preparedness activities

Ensure that security personnel are aware that family members should not have unsupervised access to the hospital

Identify a location in the compound for family members, to which they can be directed

Designate support staff and determine how information is going to be passed to support staff and who is going to do it.

Aspire to have support staff adequately training for family support (ex: psychological first-aid)

Response activities

Keep families informed at regular intervals

Implementation tips

The designated, sheltered area for family members should provide them easy access to food and drinks.

Consider the organization in the family area of regular briefs and updates on the ongoing situation.

Consider linking with religious leaders, local stakeholders/ resources to support the family area.

Questions for consideration

Is there a protocol in place to identify patients who had to be ventilated or are unresponsive?

What kind of support should be provided for those who have dead relatives?

What other support do family members need?

Special considerations for Emergency Medical Teams

Same principles apply to EMTs as for fixed Health Facilities.

Space limitations may be challenging when setting up a family area. This needs to be thought in advance as part of the MCM planning process.

Component 24.

Operational debriefings

Regular operational debriefing sessions with all participating EU staff should be incorporated into the MCM response plan. Operational debriefings after an MCI, whether real or rehearsed, are important to improve individual and overall performance and improve the psychological resilience of the healthcare workforce. Whenever

possible, a debriefing should occur in the immediate aftermath of the incident, otherwise known as a hot debrief, and there should also be a cold debrief, some days or weeks after the event.

Hot debriefs are intentionally kept short, and

process focused rather than on individual experiences. The tone of the debrief should focus on gratitude for team effort and should not dwell on errors. The cold debrief can focus more on challenges and performance. Cold debriefings may need to be repeated in the coming days or weeks, to capture all shift workers.

Preparedness activities

The structure and format of the debriefing should be agreed as part of the MCM plan

Response activities

Organize a hot debriefing as soon as you enter the recovery phase

A cold debriefing needs to be scheduled

Lessons learnt from the hot and cold debriefings should be identified and modifications made to the MCM plan as required. These modifications should be aligned with the broader hospital plan

Implementation tips

Debriefings conducted by staff members, external to the EU, may help break the institutional hierarchical barriers and promote more productive discussions.

Pre-established scripts or prompts can be helpful for hot debriefings.

Include surge staff and volunteers that were part of the response.

Questions for consideration

Is there an area inside or close to the EU where you can run a hot debrief ?

Who would be leading the hot / cold debrief in your facility?

Special considerations for Emergency Medical Teams

Same principles apply to EMTs as for fixed Health Facilities. Cold debriefs need to be carefully planned to account for staff rotations.

Component 25.

The psychological impact on staff

Retrospective observations of MCIs have revealed that they can have a deleterious effect on the welfare of healthcare staff. Inclusive debriefings can help identify members of staff who may need psychological support after the event.

In low resource settings, where professional bodies and counselling is not available, buddying or peer support has been found to have a positive impact.

In an appropriately resourced setting, offering

psychological support and identifying staff who will need psychosocial support later, should be regarded as mandatory and this should be supported by the health facility, as part of the broader mass casualty health facility plan.

Preparedness activities

Identify support mechanisms for staff who may need psychological support after a real MCI

Response activities

Conduct inclusive debriefings and provide support to those in need, depending on available resources team

Implementation tips

In addition to the traditional in-person support, consider the creation of a telephone hotline and email

The response of staff to an MCI can be quite different. Some will have a quick recovery whilst others will take months to recover, and it will have a profound effect on their lives. Therefore, there should be immediate staff support along with a planned longer-term support.

Ensure staff confidentiality when providing psychological support.

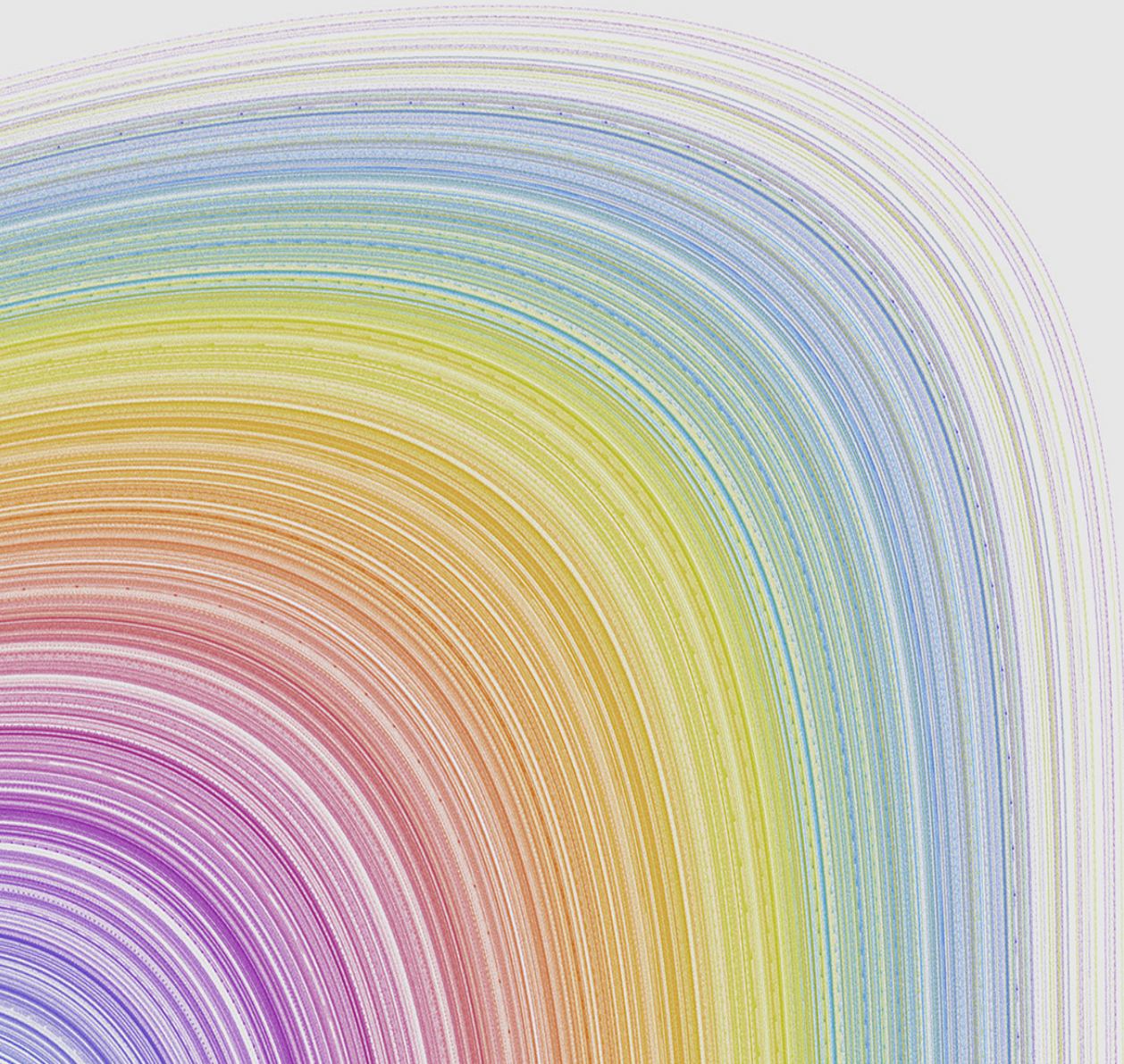
Questions for consideration

What are the current mechanisms available in your health facility to support staff in need of psychological support? Can these mechanisms be expanded and scaled after an MCI?

Is there a mechanism to provide support for volunteers?

Special considerations for Emergency Medical Teams

Same principles apply to EMTs as well as fixed health facilities. In addition, EMTs should consider the added burden of working away from home and lack of social network support and organize follow-up activities after deployment.



Conclusion

By identifying and teaching the fundamental components of Mass Casualty Management that can be applied in any resource setting, the trainees can be taken from a level of basic awareness to a level of proficiency that will enable them to build robust and sustainable mass casualty plans, directly applicable to the health system in which they work.

For further information please contact:
academy@who.int

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