

Mass Casualty Management System

Course Manual

PAHO



Pan American
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Organization



World Health
Organization
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Americas



Mass Casualty Management System

Course Manual



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Mass Casualty Management System. Course Manual

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Contents

Acknowledgements	iii
Introduction to the Mass Casualty Management Course	v
Unit 1 - Planning for Mass Casualty Incidents	1
Unit 2 - Introduction to the Mass Casualty Management System	11
Unit 3 - The Alerting Process	21
Unit 4 - Scene Assessment and Reporting	29
Unit 5 - Field Organization	39
Unit 6 - Communication Techniques in MCM	47
Unit 7 - Principles Of Triage/First Triage	57
Unit 8 - Second Triage and Advanced Medical Post	65
Unit 9 - Overview of Incident Command System	79
Unit 10 - Third Triage, Evacuation and Transport	89
Unit 11 - Fourth Triage and Hospital Reception	97
Unit 12 - Terrorism ~ The Nuts and Bolts	103
Unit 13 - Hurricanes	111
Unit 14 - Psychological First Aid	121
Triage Exercises	132
Appendix 1	135
Appendix 2	138
Appendix 3	141
Appendix 4	142
Appendix 5	143
Appendix 6	144
Appendix 7	145
Appendix 8	146
Appendix 9	147
Appendix 10	150
References	151

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Introduction to the Mass Casualty Management Course

Description of the Course

The Mass Casualty Management course is a didactic, multi-sectoral training course consisting of five days of lectures, field exercises and role-playing. It is designed to sharpen the response skills of mass casualty responders, helping them to more effectively manage events in human and/or other resources-challenged areas. On day six, it culminates in a series of practical field exercises, held at night, to underscore nocturnal challenges. Upon successful completion of the course, students will be eligible for a certificate in Mass Casualty Management, issued through the Ministry of Health or the National Disaster Office, in collaboration with the Pan American Health Organization.

The course will be of value to all persons likely to be involved in a community's response to a mass casualty event: police officers; fire officers; medical staff; first responders; ambulance service personnel; Coast Guard and the military; airport/airline employees; disaster managers; paramilitary and non-governmental organizations (NGOs), such as Red Cross volunteers; and security staff.

Course Objectives

- Define the concept of mass casualties.
- Present situations that may lead to mass casualties.
- Give participants a clear understanding of potential risks and mitigating circumstances in disaster situations.
- Demonstrate the key principles for organizing a disaster site.
- Guide key responders to maximize resources and work collaboratively during a mass casualty event.
- Facilitate the development of the skills needed for a strong working knowledge of a mass casualty triage system.
- Provide hands-on experience in the establishment of an Advanced Medical Post; stabilization of victims; and organized transfer of victims to primary, secondary and tertiary care facilities.

- Understand the basics of the impact of a hurricane; a response to terrorism; radio communications; an incident command system; supply management; and psychosocial support in disasters.
- Assist in developing team spirit among emergency/disaster responders.

Course Requirements

Students are required to actively participate in at least 90% of all class activities. Students also will be required to participate in all group work and training exercises. A written test will be given to reflect individual learning milestones; practical tests will reflect group response efforts. Please note that a minimum score of 70% on the final written exam is required for the individual participant to successfully complete this course.



Planning for Mass Casualty Incidents

Lesson Objectives

- Define the term disaster.
- Define the term mitigation.
- Define the following: emergencies, risks, hazards and vulnerabilities.
- Describe which hazards may result in mass casualty incidents.
- Describe the steps in organizing a mass casualty management response plan.
- Understand the significance of a personal disaster plan, a department plan, an institutional plan, a national plan and a regional plan.
- Outline practical management guidelines for managing mass fatalities.

Disaster Management Terminology

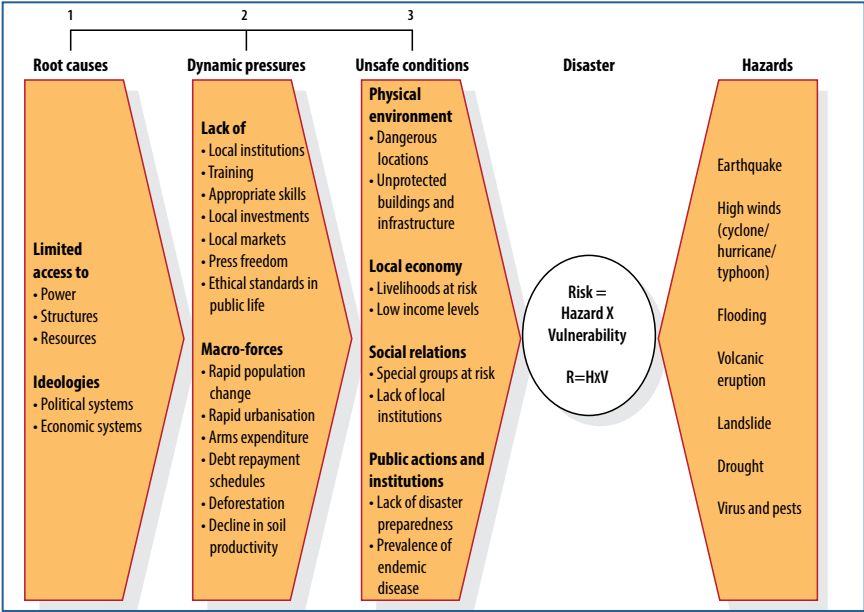
- A **disaster** is any occurrence, natural or technological, which inflicts destruction, distress and/or creates such huge demands on a community that it is unable to cope in a normal or routine way. Disasters are usually widespread and may affect physical structures or cause personal injuries or both.
- **Disaster preparedness** is the action(s) taken in advance of an emergency that develops operational capabilities and facilitates an effective response in the event that an emergency occurs. Good preparedness does not prevent disasters, but good mitigation practices decrease their impact.
- **Disaster prevention** is a goal, perhaps unreachable at times, for preventing hazards from resulting in disasters. Plans that are flexible and easy to implement are likely more useful.
- **Disaster reduction** is much closer to reality because, by man's very existence, he is prone to the effects of hazards. However, appropriate mitigation and preparedness measures will minimize the likely effects of all hazards.
- An **emergency** is a situation generated by a real or imminent occurrence requiring immediate attention. Although not all emergencies will lead to casualties or destruction, the potential for that to occur does exist. All disasters are emergencies, but not all emergencies are disasters.
- A **hazard** is the potential for a natural or technological event to occur with negative consequences on a community. The level of destruction or negative impact is dependent on the intensity of the event. Some hazards are more likely to occur in certain regions than in others. This may be dictated by climatic or geographical situations (hurricanes, avalanches, volcanic eruptions); technological advances, (collapsed bridges or stadiums, chemical spills); and prevailing ideology (terrorism attacks, mass suicides, civil unrest).
- **Mitigation** refers to the pre-event steps taken in advance of exposure to a hazard, aimed at decreasing its impact on society and the environment. 'Mitigate' (Oxford Dictionary) means to make milder or less intense or less severe. Therefore, communities need to act ahead of an event to reduce their vulnerability and the potential negative impact of hazards.
- **Vulnerability** is a measure of how likely a facility or community is to be negatively impacted by a hazard. Disasters are more destructive when the facility or community is more vulnerable.
- **Relief** is the easing of pain, distress or anxiety by deliverance of aid such as food, money or personnel to assist affected people or countries.
- **Rehabilitation** is the act of restoring something to its original state or positive condition.
- **Reconstruction** is the act or process of re-building what was destroyed (such as homes), or putting something back into good condition.

An Important Note

Disaster risk is a function of the presence of a hazard and the vulnerability of the population. Tangible vulnerability affects people, property, economy and environment. Intangible vulnerability affects social structures, cultural practices, cohesion, and motivation.

Disaster Vulnerability

Figure 1.1 The Progression of Vulnerability



Humanitarian Practice Network, ODI, 2004. Online at: <https://bit.ly/2HUU60I> (page 20).

Disaster Planning

A thorough understanding of the potential impact of disasters is required in order to understand what disaster management measures need to be put in place. This goes beyond the immediate management of victims; it also encompasses the procurement and distribution of relief supplies; attention to the public health aspects of safe drinking water; electrical power, telephone infrastructure, and public transportation; and the coordination of the rebuilding efforts with due attention given to mitigation.

Disaster planning is a system with many components: hazards; vulnerability; risk; public perception; a government's state of readiness; legislation; people; and results. Disaster planning is followed up with evaluation and constructive feedback. Disaster planning makes it possible to manage the entire life cycle of a potential crisis. It involves strategic and operational planning in order to identify priorities and operational capabilities.

Disaster planning ...

- ✓ Is proactive.
- ✓ Is systematic.
- ✓ Requires resources for effective implementation.
- ✓ Requires periodic assessment of results.
- ✓ Thrives on evaluation and feedback.
- ✓ Reduces adversity.
- ✓ Considers all hazards.
- ✓ Relies on supporting legislation.
- ✓ Requires pre-exercised plans and programs.
- ✓ Is based on forward planning, organization and leadership.
- ✓ Needs competent and dedicated people to make it work.
- ✓ Measures public perception of risk.
- ✓ Reflects a government's readiness.
- ✓ Reduces the negative impact of a disaster.

The disaster planning process should take an all hazards approach. As seen in Table 1.1, there are many different types of hazards: those classified as natural in origin—earthquakes, hurricanes, etc.; anthropogenic hazards, those originating from human activity such as mass migrations or epidemics; and technological hazards, including industrial pollution, nuclear radiation, toxic wastes, dam failures, chemical spills, etc.). The probability that a specific hazard will impact your region or community is hard to determine. That’s why it’s important to consider many different threats and hazards and the likelihood they will occur.

Table 1.1 Types of Hazards

Natural	Manmade	Technological
Avalanches Cold waves Wild fires Droughts Dust/sand storms Earthquakes Epidemics Famines Floods Heat wave Hail/Ice storms Hurricanes/typhoons/lightning Landslides Lightning Mudslides Tidal surges Tornadoes Tsunamis Volcanic eruptions	Arson Assassination Shootings Bombings Sabotage Chemical agents Enemy attack Epidemics Food poisonings Food contaminations Hostage situation Mass hysteria Mass refugee movement Sports disasters Riots/civil unrest Terrorism/bioterrorism	Accidents (transportation): automobile, aviation, bus, maritime, rail and train Building/structure failure Communication failure Environmental diseases ¹ Gas explosion Fires Fuel/resource shortages Hazardous materials Radiological accidents Industrial accidents Nuclear accidents Power/utility failure Product safety

It is important to note that planning for mass casualty incidents is just a small segment of a community's overall planning for disasters and emergencies. Figure 1.2 shows the relationships between different levels of disaster planning.

Figure 1.2 Levels of Disaster Planning



1. Environmental diseases are those associated with environmental factors, e.g., diseases caused by substance abuse, toxic exposure (chemicals) and other physical factors such as UV radiation (sun) and lifestyle diseases (heart disease).

Most countries have a National Emergency Management Agency with the responsibility, vested by the Cabinet, for coordinating the activities of all responding agencies in a disaster. In most Caribbean countries, there are Community Disaster Units/District Emergency Organizations (DMOs/DEOs), which manage smaller incidents.

A community that is well-prepared for disasters is one in which strong governmental awareness and commitment mandates contingency planning by all sectors who will be involved in an emergency response as well as by the relief agencies who are charged with post-event efforts. Good planning begins with a keen awareness of the hazards of the geographical area, the vulnerability of the community and the public alert systems in place.

Emergency response workers should also be well prepared on a personal basis, with solid home disaster plans in place that will lessen their anxiety should they have to leave loved ones in the aftermath of a disaster that affects the wider community.

Some disasters may cause significant social disruption without causing mass casualties. The disasters that tend to impact heavily on the casualty count generally give little or no warning or occur where there is limited opportunity for escape. With ample warning, persons are usually able to get to safety.

To be as prepared as possible for disasters and emergencies, communities must carefully identify the hazards that are present in their area and assess their potential vulnerability to these hazards. Only then should they develop plans to counter the effects and impacts of these.

Hazards that occur infrequently tend to cause the most damage, disruption and destruction, as the community has less experience coping with them. The less the vulnerability, the lower the likelihood of a hazard resulting in a disaster.

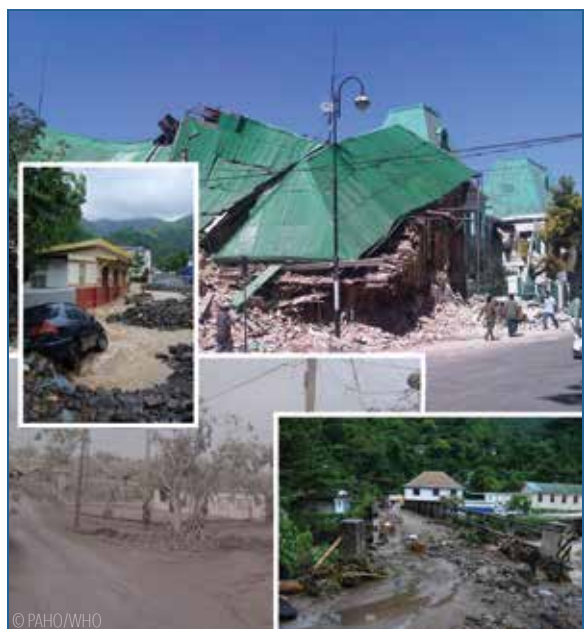
As a rule...
the **shorter** the warning
period, and the **denser**
the population,
the higher the number
of fatalities.

Impact of Disasters

Disasters may be widespread or localized and the impact they have on a community will vary depending on the type of disaster, the population density and the time of day it occurs. For example, there will be many more injuries if an earthquake strikes a densely populated region (such as Los Angeles) than if it strikes a sparsely populated region (for example, Iceland).

Earthquakes in a populated area may take lives and disrupt physical structures and roadways but food is usually still available and can, in many instances, be harvested.

Floods will destroy food, crops, and structures, but unless it is a flash flood, most people can climb to safety or be rescued.



Tsunamis have the potential to hugely disrupt a community, taking lives and destroying crops, while wreaking havoc on infrastructure.

Tornadoes can be as devastating as tsunamis; however, their effects are usually confined to in a winding narrow pathway, with only patchy areas in the community being devastated. Naturally, densely populated regions will incur costly damage.

Disasters are an interface between natural hazards and vulnerable conditions. A hazard can impact a vulnerable community causing a major disaster. Figure 1.3 shows that the extent of the impact will depend on how close the victims are to the impact zone. Disasters are unpredictable; they vary in size and intensity. They will involve emergency medical and public health consequences based on event, geographical location and population (see Table 1.2).

Figure 1.3 Overview of Geographic Areas Impacted by Disaster

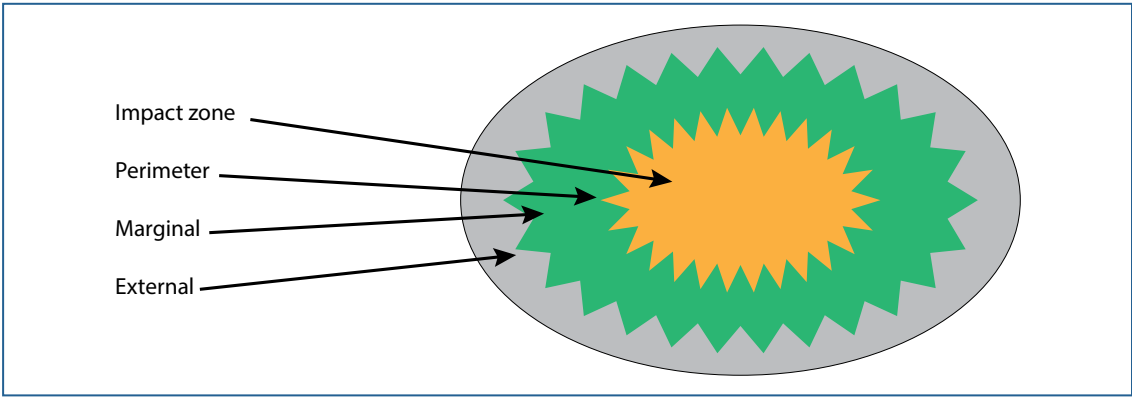


Table 1.2 Consequences of Disasters

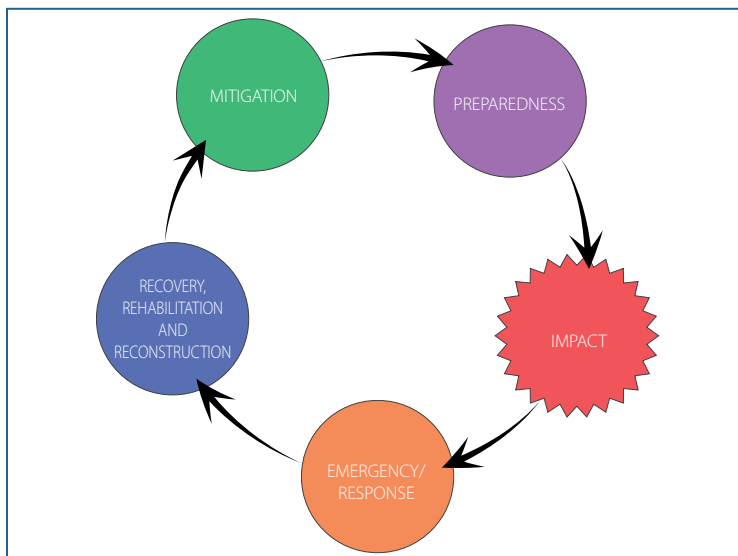
Geographical Area	Parameters			Behaviour
	Destruction	Victims	Social Organization	
Impact Zone	Total	Deaths +++ Injured +++ Shocked+++ Safe	Total confusion+++	Commotion Inhibition Stupor Prostration Panic
Perimeter Destruction	Massive	Injured ++ Shocked ++ Homeless++	Disturbed ++	Inhibition Escape Agitation Panic
Marginal	Partial communica- tion failure	Shocked +	Disturbed + strong need for a leader	Doubt Indecision Rumors Exodus
External	Nil	Nil (shocked)	Preserved	Sympathy Convergence Assistance

Phases of an Emergency/Disaster

The disaster cycle consists of the following phases:

1. Mitigation
2. Preparedness
3. Impact
4. Emergency/Relief
5. Recovery, Rehabilitation and Reconstruction

Figure 1.4 Phases of a Disaster



The length of each phase will depend on the types of incident or disaster and the degree of preparedness. Adequate planning in the preparedness phase will minimize the degree of devastation during any disaster; improve the quality of the emergency response and shortened the recovery phase

- **Mitigation:** Appropriate **mitigation** measures make communities less vulnerable. Structural and non-structural elements must be designed and erected with consideration of the hazards in a specific geographical area. Light roofs and sliding joints are more suited for earthquake prone areas; heavy roofs are better suited for areas that experience strong wind storms, stilted houses for flood prone areas, etc. Structurally, special attention should be paid to columns, pillars, beams, girders, floors, roof sheeting, decking load-bearing walls and foundations. Non-structural objects such as windows, ceilings, shelving, equipment light fixtures and furnishings require similar scrupulous attention to detail.
- **Preparedness** action(s), taken in advance of an emergency, develops operational capabilities and facilitates an effective response in the event that an emergency occurs.
- **Impact:** This is the effect of a hazard or emergency situation on a community or country.

- **Response:** Decisions or measures taken to contain or mitigate the effects of a disastrous event to prevent any further loss of life and/or property. It allows for the restoration of order in the aftermath of an incident and reestablishment of normalcy.
- **Recovery/rehabilitation:** Is the act of restoring or rebuilding what was destroyed (such as homes in a country effected) to its original state or positive condition.

Notes

[illegible]

Review Questions

1. Given the same population concentration, the highest number of fatalities can be expected to occur in:
 - a. Earthquakes and tidal waves.
 - b. Floods and hurricanes.
 - c. Earthquakes and hurricanes.
 - d. All the above.
2. The purpose and nature of an institution's Disaster Response Plan is all **except**:
 - a. Prepare institutional resources for optimal performance.
 - b. Be functional, flexible and easy to implement.
 - c. Make the community aware of the importance of the plan.
 - d. Be part of a regional Disaster Response plan.
3. Problems in the management of relief supplies for the health sector in a disaster-stricken area includes all **except**:
 - a. Too many medical personnel to assist.
 - b. Redistributing supplies on hand.
 - c. Sorting consignments of international supplies.
 - d. Translating labels of supplies donated from other countries.
4. The greatest need for emergency care of disaster-related injuries occurs:
 - a. In the first two days after the impact.
 - b. In the first five days after the impact.
 - c. After certain types of disaster only.
 - d. To help bring tourists back.
5. Mitigation as one of the activities in Disaster planning is:
 - a. Pleading the case for an accused person.
 - b. Planting trees in a park.
 - c. Surveying property for vulnerability.
 - d. Clearing a forest for agriculture.

Answer Key: 1 - a; 2 - c; 3 - a; 4 - a; 5 - c



Introduction to the Mass Casualty Management System

Lesson Objectives

- Define standard terms in disaster management.
- Understand the origin of the PAHO Mass Casualty Management (MCM) model.
- Identify the major components of the PAHO MCM model.
- Understand what constitutes a mass casualty situation.
- Understand the advantages and disadvantages of good MCM.
- Identify the need for agencies to work together.

Mass Casualty Management Terminology

- **Advanced Medical Post (AMP)** is a station or field hospital, stocked with appropriate medical supplies and equipment. It provides initial stabilization of victims near the site of a disaster or mass casualty incident (MCI). See Appendix 1 for a list of supplies.
- **Disaster** is any occurrence, natural, anthropogenic, or technological, that inflicts destruction, distress and creates such huge demands on a community that it is unable to cope in a normal or routine way. Disasters are usually widespread and may affect physical structures, cause personal injuries, or both.
- **Emergency services** refer to all agencies that are designated to respond on a daily basis to emergency situations: police, fire service, defense force, marine (Coast Guard), ambulance service, emergency department, and ancillary support services.
- **Impact phase** is the destructive period of a disaster or catastrophic event. The length of this phase varies and depends on the type of disaster.
- **Impact site** is the area directly impacted by a disaster or catastrophic event.
- **Mass Casualty Incident (MCI)** is an event resulting in a number of casualties that outstrips the ability of the local Emergency Medical Services to respond in a normal way.
- **Mass Casualty Management** describes the process of attending to the victims of a mass casualty incident, with the aim of minimizing morbidity and mortality.
- Mass Casualty Management System is a means whereby organizations and emergency response agencies work jointly, using institutionalized procedures, to minimize morbidity and mortality in a mass casualty event through the efficient use of existing human and material resources.
- Mitigation refers to the pre-event steps taken in advance of exposure to a hazard, aimed at decreasing its impact on society and the environment.
- Stabilization refers to medical interventions used to get the airway, breathing and circulation of an injured or ill person as close as possible to normal, thus allowing the victim to better tolerate movement and transportation.
- Triage is the sorting of patients to prioritize for movement, immediate treatment and evacuation. In the MCM model, triage is a continuous process that must be repeated all along the rescue chain.
- Warning is the period of time between knowing or receiving the message that a particular hazard will strike a community to the time it actually impacts. The warning phase may be quite short in an earthquake (seconds to minutes), and quite long in a hurricane (hours to days).

Mass Casualty Incidents (MCIs)

An MCI is any single event that impacts negatively on a community, causing a number of casualties that outstrips that community's ability to respond in a normal way. The point at which a community becomes

Multiple victims from the terrorist bombing of a nightclub in Bali, Indonesia in 2001.



overwhelmed is highly variable and entirely dependent on the size of the pre-hospital workforce, the available emergency room(s), the number of responders, and available supplies.

The PAHO Mass Casualty Management (MCM) System

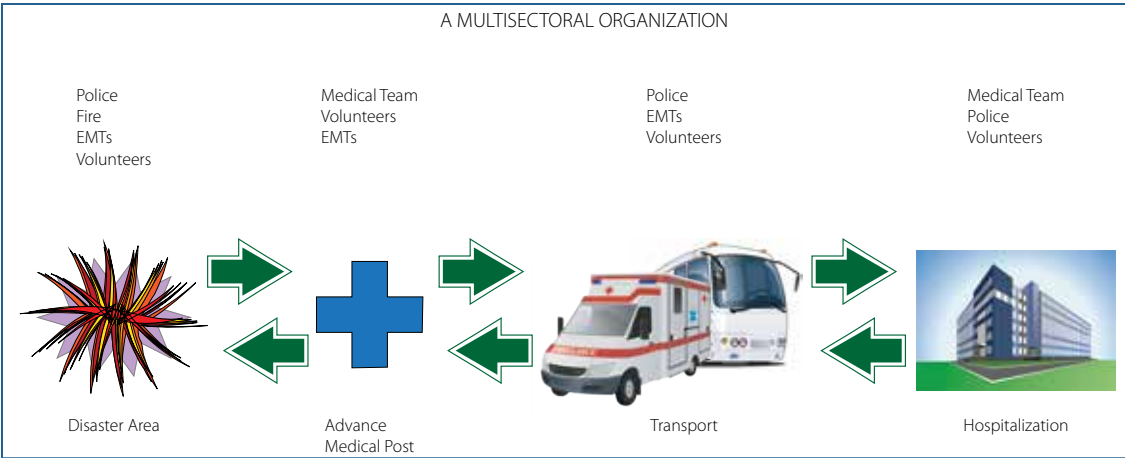
Although disasters are largely unpredictable and vary in size and intensity, they have common medical and public health consequences, depending on the event, the geographic area it affects, and the vulnerability of the affected population. The aim of disaster management is to reduce the potential losses from hazards, assure prompt and appropriate assistance to victims when necessary, and achieve rapid and durable recovery. Effective communication is a key component of good disaster management and network systems, both within and between response agencies. Communication links must be carefully planned and regularly drilled to be effective when needed.

The management of victims of a mass casualty incident is aimed at minimizing death and disabilities. In small isolated communities, limited resources, the scarcity of materials, poor communication, and lack of preparedness can pose serious obstacles to the management of victims in these incidents.

The PAHO MCM system for coping with a mass casualty incident evolved in the early 1990s as a blend of the French (SAMU, the *Service d'Aide Médicale Urgente*), British, and American rescue systems. The PAHO system was adapted to suit geographically isolated areas that had only one secondary or tertiary medical centre and limited response resources.

The MCM system incorporates the mobilization of trained persons and the required physical resources to the site of the incident, to stabilize victims prior to their transport. This model uses a multi-sectoral approach in the form of a strongly linked rescue chain of responders (police, fire, search and rescue, Marine Police/Coast Guard, pre-hospital team, ambulance, etc.). It supports the launching of an Advanced Medical Post (AMP), a field treatment area that functions as an extension of a hospital emergency room, where victims are sorted, stabilized and where evacuation is coordinated. The AMP uses pre-established, flexible procedures and organized field care that is aimed at saving as many victims as possible, with as little disability as possible, given the circumstances. The caveat is to do the greatest good for the greatest number of injured. It also allows emergency and health care services to return to routine operations as quickly as possible.

Figure 2.1 Mass casualty management requires multi-sectoral organization



If multiple medical centres are not available to receive the victims of a mass casualty incident, every effort should be made to avoid unnecessary overcrowding and confusion at the single available emergency department. The disaster should not be 'transferred' to this receiving site. The organization and management of the victims should be initiated before they enter the medical facility, if time permits. Appropriate triage and stabilization in the field and safe, controlled evacuation should be the prime objectives of victim management.

While each responding agency has its primary responsibility, all sectors should enhance each other's work, when skills, capacity, and supplies permit. This complementary interaction is carried out under a joint incident command.

The stabilization of the victims requires appropriately skilled personnel and ready access to supplies. Its goal is to improve vital signs so that victims can better tolerate transport and the inevitable delayed hospital care. Medically and morally, care providers must *do the greatest good for the greatest number of victims*. The MCM system facilitates early organization, early intervention, and early stabilization of victims, prioritized transportation and unified command.

Roles of Major Responding Agencies

➤ 911 (or your respective emergency number for dispatch of Police, Fire, EMS)

- Receiving and dissemination of alert message.
- Dispatch/mobilization of appropriate resources.
- Receiving situation updates.

➤ Police

- Possible confirmation of event.
- Security at disaster site and hospital.
- Traffic control.
- Crowd control.
- Incident Command, if no fire or hazmat is present.
- Incident investigation.
- Provision of basic first aid, if trained.

➤ Military/Defence Force

- Possible confirmation of event.
- Security at disaster site and hospital.
- Advance medical care/first aid, if trained.
- Assist with the setting up and manning the AMP.
- Providing support services at event.

➤ Fire Service

- Possible confirmation of event.

- Search and rescue.
- Fire control and prevention.
- Safety assessment and advice to other responders.
- Management of hazardous materials (hazmat).
- Perform first triage and first aid, if trained.
- Assist with movement of victims from impact zone.
- Incident command, if fire of hazardous material (hazmat) is present.

➤ Ambulance Service / EMS

- Possible confirmation of event.
- Perform first triage and medical care, if trained.
- Assist with setting up and manning the AMP.
- Provide pre-hospital care.
- Transportation of victims to healthcare facility.

➤ Non-Governmental Organizations (NGOs)

- Perform first triage and first aid, if trained.
- Supplies management.
- Assist with transport.
- Communications.
- Psychological support to victims, rescuers, relatives of victims.

➤ Emergency Room

- Provide personnel at disaster site (AMP).
- Control of the AMP, where indicated.
- May assist staff at health centres/clinics.
- Initial stabilization of victims on the field and on arrival to the hospital.
- Reception of victims at the hospital.

➤ Hospital

- Reception and treatment of victims.
- Psychological support to victims, rescuers, relatives of victims.

Conventional vs. MCM Triage Models

Conventional triage models typically use a four-colour coding system in the field, followed by rapid prioritized transport of victims to a choice of several receiving centres. The goal is to move all victims within the 'golden hour,' when they are presumed to have the best chance of reversal of poor clinical situations. However, experience has shown that well-trained as well as poorly trained persons make more errors in judgment when

using a four-colour system than when using a two-colour system, especially when these skills are not part of day-to-day activities.

In the MCM system, first triage, also known as field triage, usually is performed by trained first responders and/or lay persons and uses a two-colour triage system – acute and non-acute. Victims are tagged red or green. All subsequent triage should be done by medical or more experienced persons and utilizes the four-colour triage coding system – critical, urgent, non-urgent and dead. These are tagged red, yellow, green and black respectively.

Altogether, there are four established triage points along the MCM rescue chain between field/impact zone and receiving facility. The success of this MCM model depends on appropriate triage and re-triage along the rescue chain. See Units 7, 8, 10, and 11 for more information on the four triage points.

Establishing an MCM System

Although it may be reasonable to expect all communities to have a mass casualty management plan as part of their disaster response plans, for certain communities it is even more important that such a plan is in place and well exercised.

These communities include (but are not limited to) the following:

1. Small and at risk of isolation (e.g., island communities, remote locations).
2. Have only one secondary (and no tertiary hospital).
3. Have only one tertiary hospital.
4. Have limited skilled personnel.
5. Limited emergency response resources.
6. Have limited supplies.

Military or paramilitary agencies may be the lead agency in developing a system in the community. However, there must be a strong buy-in at the level of the hospital(s), fire department, NGOs, etc. In fact, the impetus should come from the hospital emergency department, as their role is critical to the success of the model.

Governments must realize that they have a responsibility to support training, encourage personnel, and commit the funds needed to develop and maintain the MCMS, as the community's image may be adversely tarnished in the world media if events are not managed optimally.

Ingredients for a successful MCM model are:

- Willingness at the level of local agencies.
- Repeated training of staff, preferably integrated across agencies.

Triage Points in MCM

First Triage: at/near impact site.

Second Triage: at entrance to AMP.

Third Triage: at the AMP.

Fourth Triage: at the entrance to Emergency Room.

- Keen awareness of local hazards.
- Sound knowledge of the community's emergency response plans.
- Appropriately stored mobile equipment and supplies.
- Ability to rapidly mobilize staff to impact site.
- Strong field organization skills.
- Structured and integrated Incident Command System.
- Keen personal/family preparedness skills among Emergency responders
- Frequent drills/exercises involving all agencies (minimum once a year)

Maximizing existing resources and manpower is of paramount importance to the successful management of an MCI. Each agency should be able to immediately adapt preset procedures. All agencies need to work together, helping each other to achieve their goals, where possible. Working together during periodic simulation exercises – both desktop and field - that are as realistic as possible will help to make staff members comfortable with protocols. Only then will the community truly save as many lives as possible while keeping response agencies safe. All agencies should therefore strive to attain the knowledge on how to execute the plan in order to achieve the ultimate fulfillment in a job well done.

- ✓ Attain the knowledge.
- ✓ Execute the plan.
- ✓ Achieve fulfillment!

Attributes and Challenges of the MCM System

Attributes	Challenges
Focused alert mechanisms	Costs of training and re-training
Strong inter-agency cooperation	Procurement of equipment and supplies
Early field organization	Procurement of communication equipment
Early organized medical interventions	Storage space needed for supplies
Continuous revision of patient status	Delayed patient transport to hospital
Pre-hospital stabilization of victims	Need for regular update of SOPs
Prioritized organized transportation	Need for regular update of contact information
Selection of appropriate destinations for victims	Dependency on inter-agency cooperation
Alleviates bottle-necks in emergency rooms	
Unified field incident command	
Strong communication links to field	
Inter-sectoral training that strengthens bonds	
Other non-disaster patients can be assessed	
Earlier return to pre-disaster status	

Notes

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Review Questions

1. The most important aspect of mass casualty management is:
 - a. Willingness.
 - b. Lots of resources.
 - c. Organization.
 - d. Specialists.
2. The implementation of a Mass Casualty Management System in a country or an area is usually justified by the existence of:
 - a. Limited rescue resources.
 - b. Risk of isolation.
 - c. One single secondary or tertiary level hospital (level 2/3).
 - d. All the above.
3. For the hospital management of mass casualties, the most basic principle is:
 - a. Immediate adaptation of pre-established procedures.
 - b. Highly specific procedures.
 - c. Quick implementation of a brand new specific organization.
 - d. Setting up of a disaster committee prior to any action.
4. The disaster cycle sequentially consists in part of:
 - a. Mitigation, preparedness, impact, response.
 - b. Impact, mitigation, response, preparedness.
 - c. Preparedness, impact, rebuilding, response.
 - d. Impact, clearing, rebuilding.

Answer Key: 1 - c; 2 - d; 3 - a; 4 - a



DATE	INSTITUTIONS	LOCATION
27 Feb	MSF-B MDM Cam MDM Fi	St-Francois Cite St Port au Prince

The Alerting Process

Lesson Objectives

- Identify the principles of the alert phase of an emergency response.
- Understand and list the seven key steps to receiving and issuing a mass casualty alert.
- Recognize the value and role of an initial assessment team.
- Understand the concepts of inter-agency information sharing.

Initiating the Alert

A prompt and appropriate response to a mass casualty situation begins with a good alert. This is a sequence of activities implemented to efficiently mobilize adequate resources. It includes an initial warning that may come (a) directly to the Emergency Department; (b) via the police Communication Operations Centre; (c) the Fire Service; or (d) the Dispatch System (911, 211, 511 etc.), depending on the current system. An appropriate assessment of the situation and prompt dissemination of the alert message is important.

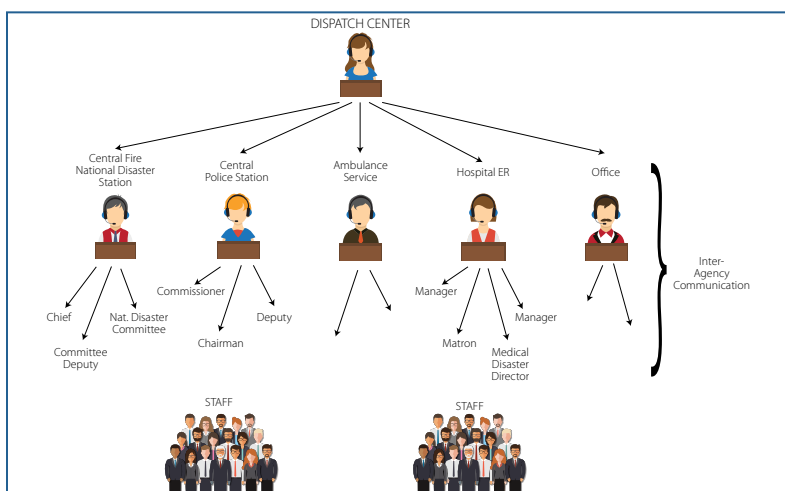
Key Components of the Alert Message

- Record time call received.
- Confirm who is calling (note if issued by non-qualified observer).
- Caller's phone number/name (if available).
- Precise location of event.
- Time of event, or closest approximation.
- Type of incident.
- Estimated (or *guesstimate*) number of casualties, where possible.
- Potential risk to victims, rescuers and exposed population.
- Safest approach route.

Each agency should have a pre-established method of rapidly mobilizing their key personnel to the site of the emergency (impact zone, field command post) or the control centre (offices). A radio broadcast, telephones, pagers, group e-mails, text messaging, television or UHF/VHF radios may be used to rapidly activate a large number of responders.

On a day-to-day basis in a comparatively minor emergency, one dispatcher calling all concerned personnel will work quite well. However, in a mass casualty setting, this system will be totally overwhelmed unless pre-existing back-ups are part of the system. Each community must find the most effective method available to them, based on their resources. A useful option is the call-out cascade system (see Figure 3.1).

Figure 3.1 Example of a Cascading Telephone Alert System



In this system, one person calls two or three others, who in turn call two or three other people each, and they in turn call two or three others each, and so on. This method is helpful and removes the burden of multiple calls from one or two persons. To work effectively, this method requires appropriate pre-planning. The time of impact is certainly not the time to request individuals to pass on information; persons should know ahead of time what is required of them.

Another call-out system gaining rapid popularity is the use of computerized batch alerts, where pre-recorded or live messages can be sent simultaneously to any number of cellphones/handhelds to activate a particular response.

Information Flow as Part of the Alerting Process

The Initial Assessment Team (IAT) from each agency should hasten to the field and conduct an appropriate size-up of the scene (relevant to their agency) before giving feedback to their base and sharing the information between agencies where needed. Early inter-agency (between agencies) as well as intra-agency (within an agency) collaboration is encouraged.

Within each agency, there should be clear and well-circulated guidelines for internal information flow. These guidelines are usually built into the Standard Operating Procedures (SOPs) for each department and should include the following:

- Who receives the initial alert?
- What are the different phases of an alert process?
- What are the required lines of communication for various situations and through which department(s) should it flow?
- How can the size of the response be contracted or expanded - regarding both human and material resources?
- Who has the authority to activate the disaster plans?
- How is the call-out performed?
- Which section(s) of the plan needs to be activated?

It is key that all aspects of the incident affecting the quality of the alert are promptly assessed and readily shared with all agencies concerned so that appropriate personnel and equipment are mobilized as quickly as possible, while maintaining the safety and security of responders. Time is of the essence!

In theory, the alert can be divided into three main phases:

1. Pre-confirmation phase
2. Confirmation phase
3. Post-confirmation phase

Each agency must have clear and well-circulated guidelines for information flow.

The **pre-confirmation phase** is used if the informant is not a trained responder. Note that the pre-confirmation phase will not be used if the call is received from a number of persons or from a member of the emergency services. In the pre-confirmation phase of a focal incident, the IAT is sent out and key persons are placed on standby while the emergency department prepares for a patient surge; the fire department prepares to launch additional equipment and the police have response or backup units queued for mobilization. Certain equipment may need to be placed on standby during this period so that it is readily accessible during the actual rescue.

The initial assessment must be reported immediately to the dispatch centre to avoid delay in the mobilization of resources or loss of critical information. Confirmation also allows responders to receive the kind and type of resources needed.

At the **confirmation phase** of a focal incident, the IAT is reinforced with additional personnel and supplies to accomplish scene safety assessment, search and rescue of victims, initial management of victims and preservation of the scene for criminal investigation, if this is indicated. This heralds an acceleration of preparedness at the hospital, as front line departments, such as ER, ICU, radiology, operating room, laboratory, and wards, prepare for an increased demand.

The **post-confirmation phase** of a focal incident includes the entire period from the rescue to the restoration of order and stand-down to resumption of normal activities. Understandably, the actions will vary from agency to agency, but the concept is the same. A frequently forgotten part of the post-confirmation phase is forgetting to issue the “stand down.” These words officially signal the end of the post-confirmation phase. It is not surprising that the field will likely stand down before the emergency room and that the ER stands down before the operating room, etc.

In actuality, the time span between these phases can be highly variable from agency to agency and department to department. Likewise, the margins between phases may be blurred. It is important to also note that different types of incidents or emergencies can result in significant variations in the timeline of these phases. For instance, the phases for a hurricane strike will be different from those of an earthquake; the forecast warning in one instance can be hours and seconds in another; the impact can last for hours in one case and minutes in another.

Since different departments require different levels of readiness during a mass casualty response and have different levels of preparedness for the pre-confirmation, confirmation and post-confirmation phases, it is helpful to use standardized colour codes to represent these various stages of readiness. The following Alert Levels outlines a method that is popular in some agencies.

Green Alert

This stage indicates that an incident has been reported but is not yet confirmed by any recognized Response Agency (Pre-confirmation phase).

Yellow Alert

This stage indicates that an incident has been confirmed by a Response Agency (Confirmation phase).

Red Alert

This stage indicates that victims from the incident have begun arriving or activities related to the incident are being processed (Post-confirmation).

Each person or department must have a clear idea of his or her roles and responsibilities at each stage of the alert – green, yellow, and red. These roles will vary from person to person, department to department and stage to stage. It is helpful to prepare Action Cards outlining the required actions to help jog the memory of responders during the response phase.

Summary of Alerting Activities

- Key information is gathered from informant.
- Initial Assessment team (IAT) is launched to confirm, if needed.
- IAT reports back to base to give updates/corroborations.
- Intra-agency information sharing is initiated, as appropriate.
- Inter-agency information sharing is initiated, as indicated.
- Appropriate call-out of required agencies is mobilized.
- Other potential responders are placed on appropriate alert.
- Back-up teams are placed on stand-by to act as relief staff.

The assessment of the scene should also include the identification of field working areas: e.g. the impact zone; the command post; holding point; the triage area; etc.

Notes

[illegible]

Review Questions

1. When receiving an alert message, all of the following are true except:
 - a. The time of the event should be documented.
 - b. The type of incident will dictate the type of response made.
 - c. Obtain vague directions to the location.
 - d. Always be the last to end the call.
2. Methods of disseminating call-out information include(s):
 - a. Cascade phone system.
 - b. Group radios and pagers.
 - c. Word of mouth.
 - d. All of the above.
3. In general, persons responding to work following an emergency call-in should:
 - a. Have a pre-designated meeting place.
 - b. Wait for a post-confirmation alert.
 - c. Bring with them their identification, food, and water.
 - d. Call Dispatch and confirm the event before responding.
4. The initial responder to arrive on the scene of a mass casualty incident should first:
 - a. Start rendering medical care to victims.
 - b. Start triaging victims.
 - c. Set up an AMP.
 - d. Do a situation and needs assessment and then report back to base.

Answer Key: 1 - c; 2 - d; 3 - a; 4 - d



Scene Assessment and Reporting

Lesson Objectives

- Recognize the potential hazards to rescuers at the scene of an impact zone.
- Recognize the potential hazards to the exposed population near an impact zone.
- Demonstrate situation-appropriate safety steps at an impact zone.
- Identify appropriate partner agencies needed in a given response.
- Draft concise updating reports from the scene.

Scene Assessment

Scene assessment is a sequence of activities, conducted by first responders, to determine the full extent of the incident and its possible complications, before reporting back to home base/ headquarters.

As they approach the scene, responders must keep scene safety foremost on their minds. All attempts must be made to gather information from the dispatcher, the person reporting the incident, and any available bystander(s). The Initial Assessment Team will play a key role in the assessment process. Their observations and deductions will be used to:

1. Ensure that what is observed at the scene matches the initial report.
2. Heighten awareness of potential risks to rescuers.
3. Get the appropriate of response personnel to the scene (numbers and skills).
4. Activate key agencies that may be needed at the scene.
5. Advise other responders on the safest approach route.
6. Initiate mobilization of appropriate equipment and supplies to the scene.
7. Determine safe working zones for the response efforts.
8. Assess the safety of the surrounding population.
9. Be aware of any potential for escalation, secondary explosions, toxic exposures, signs and symptoms of suspicious of biological, chemical, or radiological (BCR) exposure.
10. Give prompt feedback to base.

A delicate balance between caution and bravery must be maintained. The following basic guidelines should be employed by any agency approaching the scene of an incident:

- Plan the access carefully and approach with heightened alertness and caution.
- Carefully observe the scene and your surroundings from a safe distance.
- React promptly to any evolving situation.
- Look for obvious hazards, possible hazards and potential hazards.
- Retreat from any perceived threat or danger.
- Radio or call for help or back up, if needed.
- Reevaluate the situation continually and act accordingly.
- Control the scene while maintaining a professional attitude. The most senior responder should act as Incident Commander until more senior personnel arrive.
- Wear personal protective equipment (PPE) and reflective vests where indicated.

Recognizing Scene Hazards

Any incident has the capacity to cause disruption, instability and potential changes that may impact negatively on those around. A scene hazard is a threat, at or near the impact zone, which puts victims, rescuers or the

exposed population in added danger. Some hazards are immediately obvious, while others may be latent or obscure. A sound use of common sense smoothly blended with knowledge, is needed to chart the best approach.

Coping with Hazards

The following information outlines key management considerations in various situations:

Motor Vehicle Accidents

- Are the victims trapped?
- Is there a fire or the potential for a fire?
- If present, what is the nature of the fire?
- Is the incident over a cliff?
- Is special equipment required?



Fires

- Your own safety is first priority.
- Call for appropriate help.
- Do not attempt a fire rescue unless you have received special training to do so.
- Never approach a vehicle in flames.
- Blankets or fire extinguishers can be used to control smaller flames.
- Always feel the top of doors before opening them; a hot door means fire is behind it.
- Never attempt to enter a building that is on fire or emitting smoke without the appropriate training and gear.
- Even small fires can emit toxic fumes.
- Never enter a smoke-filled room without appropriate gear.
- If you are in a smoke-filled room, stay low and creep along the floor to safety.
- During escape, cover nose and mouth.
- Never enter an unstable building unless someone outside knows you are going in.
- Never use the elevator in a building that is reported or noted to be on fire.



Radiation Accidents

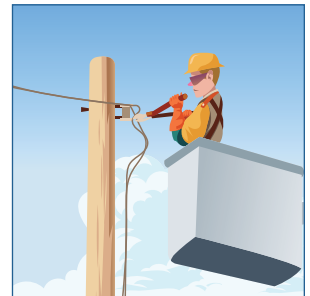
- Your own safety is first priority. Stay clear.

- Call for help. Special personnel and equipment are needed.
- The area in the vicinity of radioactivity is called the hot zone.
- Stay upwind; this is the cold zone. The further away you are, the safer you will be.
- The warm zone is the area between the hot and cold zones, where decontamination can take place.
- Exposed persons are those who have been in the presence of radioactive material, but not contaminated.
- Exposed persons do not pose an additional risk of radiation to the rescuer.
- Contaminated persons actually have radioactive material on their clothes or bodies or both.
- Contaminated persons can potentially contaminate the rescuer.
- Hazmat teams must decontaminate contaminated victims before medical care is rendered.
- Do not attempt to care for contaminated victims until it is safe to do so.
- Be guided by the experts, usually from the fire department.



Downed Electrical Wires

- Your own safety is first priority.
- Do not step into water where downed wires are submerged.
- Do not attempt rescue until the power company has turned off the electricity.
- All downed electrical lines should be considered and treated as if they are live.
- If victims are in a car that is in contact with downed wires, ask them to stay inside and avoid touching metal.
- If victims must exit rapidly, advise them to jump away so that they do not touch car metal and ground simultaneously.



Gases

- Your own safety is first priority.
- Natural gas is odorless but commercial additives allow a distinctive smell.
- If the odor of gas is noted in a room, swiftly move victims to open air.
- Rapidly evacuate the building.
- Shut off gas supply from the stopcock. If bottled gas is in use, shut off supply and disconnect the head.



- Vent the rooms as you exit by opening windows and doors.
- This is a potentially explosive situation. Do not turn light switches on or off. This can ignite the room. Turn off main power supply.
- Do not ignite lighters, matches, self-igniting stoves, etc. in the area.
- Do not use doorbells or turn on radios, flashlights or other electrical sources in the area.

Explosions

- Your own safety is first priority.
- Be wary of secondary explosions.
- Be aware of exposed hazards and instability of surrounding structures.
- Quickly move victims to a collecting point when possible.



Hazardous Materials (Hazmat)

- Your own safety is first priority.
- Hazmat materials may be in the form of a gas, liquid, or dry chemicals (powder).
- The immediate vicinity of the material (danger area) is called the hot zone.
- Special protective gear is required for safe access to the affected area.
- Never enter the affected area unless you are trained and are wearing appropriate protective gear.
- Retreat or stay upwind. This safe area is called the cold zone.
- Contamination must be removed by the appropriate method or manner, which may require specialized training.
- Victims must be decontaminated before any care is rendered to them.
- Initiate the evacuation of the exposed population, if it is safe for you to do so.
- Avoid streams and drains flowing through the affected area.
- Report or confirm the following to authorities:
 - Nature of incident.
 - Location of event.
 - Type of material.
 - Approximate quantity of material.
 - Color and number of displayed placard/label on the hazardous material container.
 - The type of container.



- Stability of material, e.g., flaming, blowing or vaporizing.
- Weather conditions in affected area.
- Estimated number of victims exposed.

General Scene Safety Tips

- Pull your own response vehicle completely off the road, where possible.
- Turn on emergency flashers so that you are not a risk to oncoming drivers.
- Be aware that if you are dressed in dark clothing you will not be readily seen.
- At vehicular accidents, look for oil spills and fire.
- If you are downhill from the scene, fuel may run in your direction.
- Check if vehicles are at risk of rolling or sliding away from the at-rest position.
- Look at wind direction.
- Park and approach from upwind if smoke or noxious gases are present.
- Look for downed electrical wires.
- Remember that water conducts electricity.
- Look at stability of overturned vehicles, collapsed structures and landslides.
- Note if victims are scattered over a wide area, as with explosions.
- Consider if it is appropriate to suspect terrorist activities.
- In situations of violence or hostility (shootings, stabbing), stay low and distant.
- Think of obvious, potential or probable hazards and report these back to base.

The objective always should be to do the greatest good for the greatest numbers – maximize the number of lives saved and minimize the negative impact on persons, then property.

Report back to base with the following information:

- Confirmation of location
- Confirmation of type of incident.
- Additional resources needed.
- Actual or estimated number of victims.
- Confirmed safe approach route.
- Obvious, potential or probably risks to exposed population.
- Provide base with updates as new information comes to light.

Do victims need to be moved rapidly? This will apply if the impact site is unstable, e.g., collapsed building, potential explosion or impending danger. A collection point can then be established at the closest, safest spot. Thorough feedback, along with any obvious, potential, or probable hazards, must be reported back to base at the earliest possibly opportunity. This is of paramount importance for all agencies and this cannot be over-

stressed! In all situations, a holding point should be established for persons who can walk un-assisted from the impact zone.

Resources are defined as all personnel and major items of equipment (including crew) that are available, or potentially available, for assignment to incidents. Resources are classified by the **kind** or **type** of resource required.

- **Kind** describes what the resource is (e.g., fire apparatus, medical staff, crane etc.)
- **Type** describes capability of the resource (e.g., foam tender, ER nurse, mounted crane, etc.)

The first responder, on reporting back to base, should specify the kind and type of resources needed.

Agencies Required

Based on the incident and the hazards, actual or potential, the following agencies may be involved in the response:

- Police will always be required for security, control and investigation.
- Fire Service
 - Required if there is a fire or potential for a fire.
 - Required for extricating victims from vehicle or collapsed building.
 - Also required in cases of hazardous material spills.
- Health
 - Only required if there are casualties.
- Disaster / emergency agencies required to provide support to main players.
- Military required to provide support to other agencies and assist law enforcement.

Notes

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal blue lines across its entire width. The paper is otherwise completely empty, with no margins, text, or other markings.

Review Questions

1. If you suspect the scene of an incident contains hazardous material and you have no protective gear, you should:
 - a. Rapidly remove any victims from the impact area.
 - b. Shake and shout "Are you okay, are you okay?"
 - c. Stay clear of the hot zone.
 - d. Move all victims to the cold zone so they can be quickly decontaminated.
2. Which of the following is true about scene assessments?
 - a. Only firemen and policemen can do proper scene assessments.
 - b. Approach with caution and push hazards quickly out of the way.
 - c. The number of victims should be assessed, as this is the only feedback needed.
 - d. None of the above.
3. The first response team to arrive on scene must:
 - a. Perform a rapid scene assessment.
 - b. Report any obvious, potential or probable hazards back to base.
 - c. Estimate number of victims.
 - d. All of the above.
4. In the presence of a fire, all are true of rescuers, **except**:
 - a. Must keep low and cover their nose and mouth to escape, if in a smoke-filled room
 - b. Blankets and fire extinguishers could be useful firefighting tools.
 - c. Feel the bottom of any closed door and open it only if it is not hot.
 - d. If untrained in fire fighting, never attempt to enter a burning building.

Answer Key: 1 - c; 2 - d; 3 - d; 4 - c



Field Organization

Lesson Objectives

- List the steps that first responders must take at the scene of an emergency/disaster.
- Describe several actions that may be taken to enhance the quality of an effective response.
- Describe the zones and boundaries in standard levels of field organization.
- Identify safe access routes to and from an incident.

Field Organization

Expect initial confusion during the field organization. Emergency personnel, good Samaritans, relatives, spectators and others may contribute to this. However, all players can take purposeful action to create a semblance of order. The Initial Assessment Team on site should initiate the organization of the field—the area where the incident has occurred. Subsequently, as the situation evolves, it should be handed over to more senior personnel as they arrive. Zones, or working areas, need to be quickly set up to guide all responders to well-identified spots, paying particular attention to the care of the injured. This will facilitate smooth operations for all agencies.

One of the best ways to present identified working areas is to sketch a map of the area, including the main topographical and physical features such as roads, natural/artificial boundaries, ponds, rivers, etc. This map will help to identify potential risk areas, the location of victims, access roads and the various field areas, including the boundaries of restricted areas. Compass and wind direction should also be noted.

Figure 5.1 Sample Map of the Area



Safety and security at the scene is needed to protect workers from external influences (additional stress); avoid obstruction of victim flow and rescue resources; and protect the general public from exposure to risk.

Work areas in the field must be quickly identified and clearly marked. As they identify and allocate space for work zones, the appropriate agencies must take into account the activities that will be performed in each. The following zones must be identified:

- **Strictly Restricted Area (Impact Zone):** This is the immediate site of the incident, including where all victims can be seen. The impact zone should be cordoned off and secured as soon as possible.
- **Restricted Area:** This is the safe and secure field working area. Only authorized personnel are allowed in this area. It contains the following:
 - **Collecting Point(s),** used when the impact zone is unsafe and/or to rapidly clear the impact zone as needed. In most cases, search and rescue personnel conduct the evacuation. Victims will be triaged by first responders prior to being transported.

- Holding Point is established for those who are ambulatory without assistance. This will allow rescuers to assess casualties that may need to be removed by stretchers from the impact zone.
 - Advanced Medical Post (AMP) is an extension of the hospital emergency room and functions as a field hospital for stabilizing and monitoring victims prior to transport. Medical personnel and volunteers staff this area.
 - Command Post is a multi-sectoral control unit, staffed by senior representatives of all agencies responding to the scene. This location should accommodate all communications (visual, radio and road). It is established to coordinate the various sectors involved in field management; link with back-up systems to provide information and mobilize necessary resources; and supervise victim management.
 - Evacuation Area is the zone for loading patients into suitable vehicles, according to their level of acuity.
- Reserved Area: Most disasters will attract the press and, in some cases, politicians. In the interest of security and privacy for the victims, as well as a free working area, a reserved area is established. This is located outside the restricted area. Information officers, who relay communiqués from the Incident Commander, staff this area. There must be communication capabilities at all times between this area and the Incident Command Post.
 - Refreshment Area: This area, which may be referred to as the Demobilization Area, is the last to be set up. Volunteer agencies, non-governmental organizations (NGOs) and Critical Incident Stress Management (CISM) team members can man this area, which can provide light refreshments and psychological surveillance/support to rescuers. This area can also be set up at an identified camp or base.

Access and evacuation roads should be identified and incoming vehicles informed of these routes. A staging area should be identified and established. Optimally, the staging area should be no more than five (5) minutes from the impact zone. All arriving resources and personnel should report to the staging area for check-in. They should be documented as they arrive and remain in the staging area. This area will function as a “stand-by” location on the periphery of the main activities.

Vehicles should use the Noria or ‘conveyor belt’ system for accessing the evacuation area wherever possible. This will allow for a smooth flow of traffic and avoid bottlenecks.

The efficiency of pre-hospital activities requires strong coordination among all responders. As the field is set up, it is important to consider the presence of hazards and allocate working areas accordingly. For example, if toxic smoke is present, working areas should be upwind. The size and design of the working areas depend on the type of incident, the wind direction, and the topography of the area. See Figures 5.2 and 5.3.

Figure 5.2 Site of a Road Traffic Accident

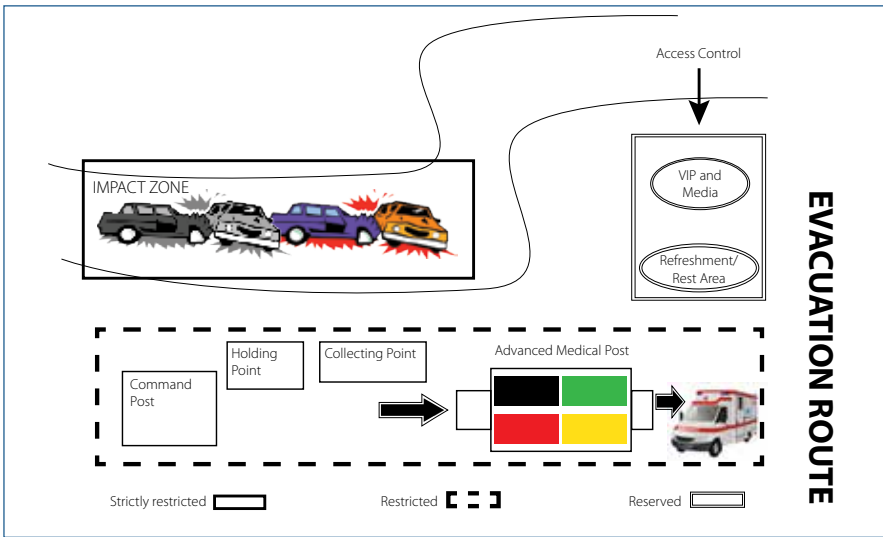
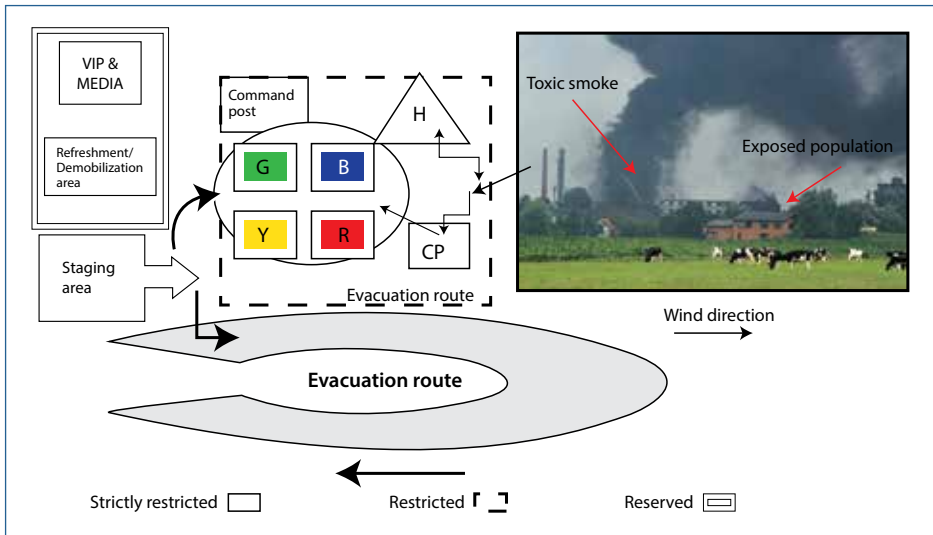


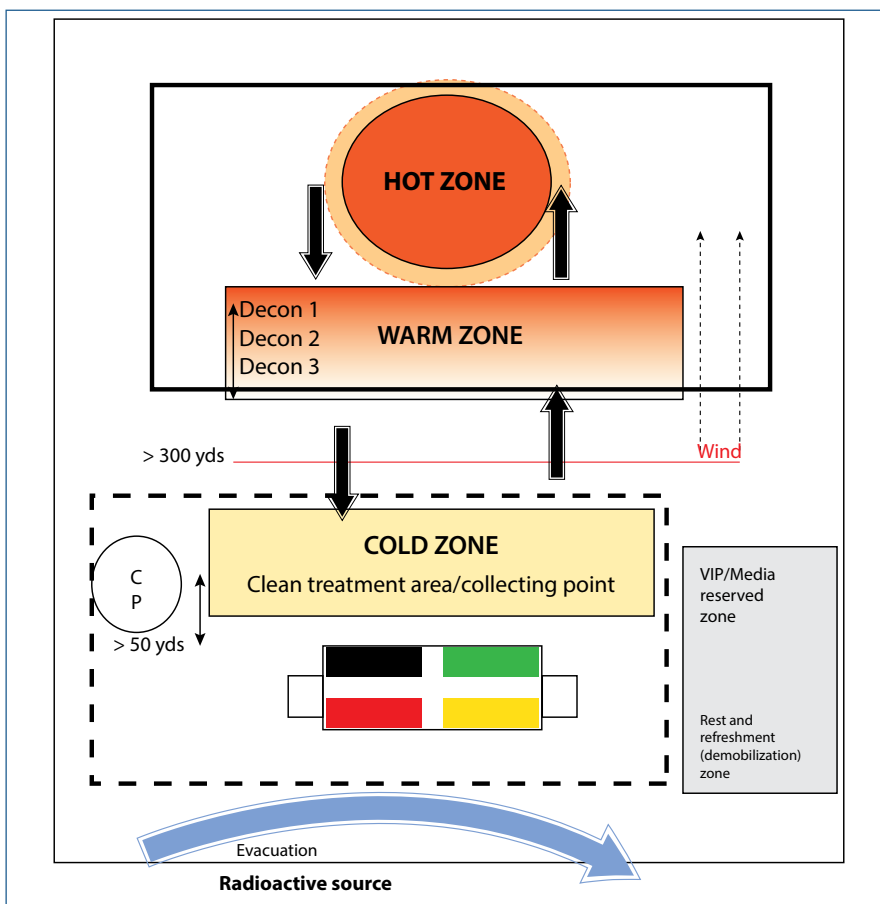
Figure 5.3 Chemical Fire



Haz-Mat Scene Operations

- The Hot Zone is the area immediately surrounding the release of hazardous materials and is the most contaminated area. All personnel must be decontaminated when they leave the hot zone.
- The Warm Zone is where personnel and equipment transition into and out of the hot zone. It contains access control points to the hot zone and the decontamination area. Decontamination is the process of removing or neutralizing and properly disposing of hazardous materials.
- The Cold Zone is the safe area where personnel do not require special protective clothing. It includes personnel staging, the Command Post, EMS providers, and the area for medical monitoring, support, and/or treatment after decontamination.

Figure 5.4 HazMat Zones



Notes

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Review Questions

1. Upon arrival at the scene of a mass casualty incident, the crew of first responders must first:
 - a. Set up a Command Post.
 - b. Conduct an initial assessment.
 - c. Commence search and rescue.
 - d. Start immediate first aid.
2. Having completed the above task, the crew should then:
 - a. Set up a Medical Post.
 - b. Commence the first triage.
 - c. Report to their headquarters.
 - d. Organize the field.
3. Which of the following is the correct priority sequence in Field Organization/Management?
 - a. Start Medical Care ➡ Establish Command Post ➡ Scene Assessment.
 - b. Scene Assessment ➡ Start Medical Care ➡ Establish Command Post.
 - c. Establish Command Post ➡ Scene Assessment ➡ Start Medical Care.
 - d. Scene Assessment ➡ Establish Command Post ➡ Start Medical Care.
4. The Initial Assessment Team at the scene of a mass casualty incident should organize the field into working areas, e.g. Command Post, the AMP, etc.
 - a. True
 - b. False

Answer Key: 1 - b; 2 - c; 3 - d; 4 - a



Communication Techniques in MCM

Lesson Objectives

- List the various modes of communication that can be used in emergency response.
- Understand the principles of the proper use of handheld radios.
- List five options available for communication when conventional methods fail.
- Get hands-on training in sending and receiving radio messages.
- Learn the International Phonetic Alphabet.

Overview

Prompt and appropriate information sharing is pivotal to getting the right personnel and equipment to the scene of an incident at the earliest possible opportunity. Knowing who to tell is as important as knowing what to tell. One needs to have both the skills and the tools to effect rapid information transfer within the agency (intra-agency) and between agencies (inter-agency).

Communication tools, pathways, and backup systems need to be established well before the event. The type of hardware used will depend on the country's resources and the will of policy makers. Occasionally, despite the availability of sophisticated equipment, a disaster may be so catastrophic that responders are forced to go back to basics. Radio communication has long been the gold standard for field communications and is still widely used today, so some time will be spent on proper radio use and etiquette later in this chapter. However, in this decade, the wide availability of cell phones and e-mail has lent another dimension to the responders' arsenal—instant messaging, video conferencing and photo sharing—although these too may fail. Therefore, national plans must include one or two fallback communication options.

General Modes of Communication

The type of communication tools used in a particular situation will depend on availability; target persons/groups; range of transmission; time constraints; and desired outcome.

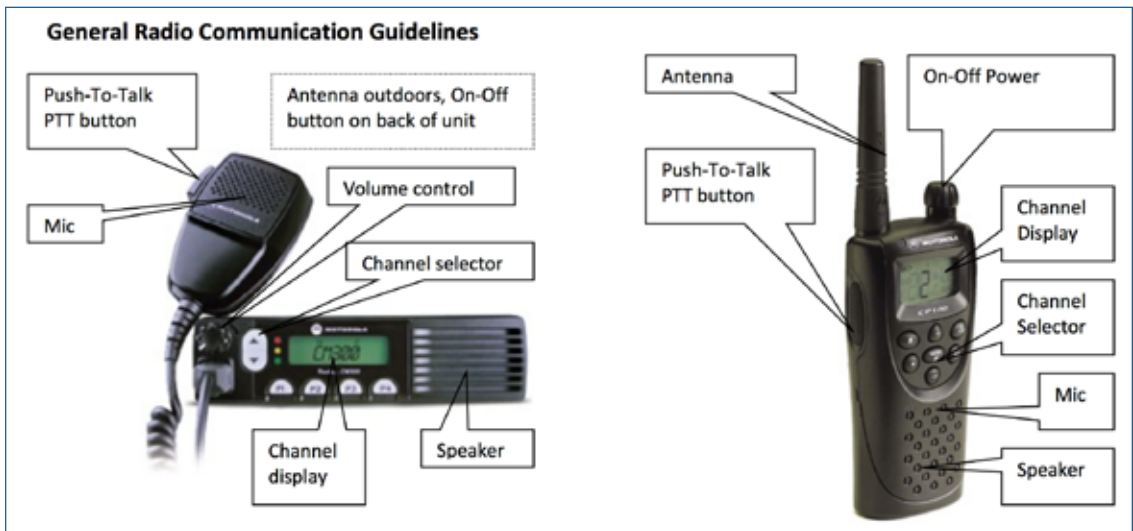
Some examples include:

Bells	Horns/whistle	Satellite phones
Blimps	Kites	Skywriting
Codes/Morse code	Letters	Sign language
Computers	Light signs	Sirens
Drums	Mass media (TV, radio, etc.)	Telephones
Email	Notice boards	Telegrams
Fax	Pictures	Text messaging
Flags	Pigeons	
Flares	Radios UHF/VHF	
Hand signals	Runners	

Currently, VHF radios form the basis of communication between an agency's base and its mobile units. Different radio models have varying shapes, sizes, weights, capabilities, and battery life. For the radio novice, you will need to become familiar with and master a few basic operational skills. These include:

- **Power source:** usually the electrical mains for desktop models and rechargeable batteries for hand-held models.
- **Antennae:** different lengths in the handheld models; mounted outdoors in the desktop models.
- **On-Off power and volume** button: turns unit on or off; volume up or down.

Figure 6.1 Examples of Desktop and Handheld VHF Radios



- **Channel selector button** (variable position): switches the radio to a pre-programmed talk group.
- **Channel display**: indicates which channel you are using.
- **Push-To-Talk** or PTT button: allows voice transfer when depressed and voice reception when released. This must be depressed for transmission (talking) and released for receiving (listening).
- **Mic and Speaker** positions: point from sending and receiving sound. These are usually positioned on the front of the units.

The use of VHF radios is legislated in most countries and a license of ownership is usually required. They must be programmed to have the capability to be linked together. During transmission of the spoken word, the voice is converted to radio waves and transmitted to repeater stations, then back to other units programmed in that group or configured to receive from that group. The system utilizes transmitter station(s), erected at a higher altitude (hilltop or mountain), which relays the radio waves between battery-powered handheld or desktop devices that act as both a transmitter and a receiver.

There may be challenges or limitations to transmission due to the contour of the surrounding terrain. In these instances, a change in physical position may improve transmission.

Unlike a telephone, the VHF radio cannot transmit and receive simultaneously; it does either one or the other. This is important to remember when using the device. Depress the PTT button to talk and release it to listen.

Call signs must be established for each unit so that the caller can attract the attention of the appropriate station. The "station" is a fixed physical radio location. Transmissions may be made from station-to-station, caller-to-station, or caller-to-caller, but all radios in the group will be able to hear the transmission.

The advantage of radio telecommunications is the simplicity of operation and the direct transmission of the spoken word. However, the ease of the operation has led to abuse. Careless use of voice procedures, plus circuit overload with unnecessary traffic, have created much confusion at times when good communication was imperative.

OFDA² Recommended Voice Communication Procedures

What to Do	Why do it?
<i>Listen</i>	To ensure your transmission won't interfere with other communications; to be aware of other things going on.
<i>Think about what you say</i>	To communicate your ideas effectively and to use the minimum airtime necessary.
<i>To make the call, give:</i> <ul style="list-style-type: none"> The call sign or identification of the station called The words "THIS IS" The call sign or identification of the calling station. 	To be clear and well understood on the first call. To use a procedure that is commonly accepted. To let the receiver know who is calling (e.g. "Base, this is AMP Manager").
<i>Communicate:</i> <ul style="list-style-type: none"> Speak clearly Use plain language, no codes Repeat critical items for confirmation End every transmission with "Over" if a reply is expected; "Out" if no reply is expected. 	To be understood and to be fast. To avoid confusion. To be accurate and reduce stress. To use a procedure that is commonly accepted worldwide.
<i>Use phonetics for:</i> <ul style="list-style-type: none"> Call signs Station identification Spelling words and names that are not easily understood 	To be clear and accurate To be fast To use a procedure that is commonly accepted worldwide.

Standard Pro-words

Procedure words, also known as pro-words, are words and phrases used to speed up the transmission of radio telecommunication messages. The following are some common useful examples.

Pro-words	Meaning
"All After"	All after
"All Before"	All before
"Correction"	Error
"Figures"	Numerals or numbers to follow
"Full Stop"	End of a sentence ("period" or "stop").
"I Say Again"	I am repeating the transmission.
"I Spell"	I shall spell the next word phonetically.

- OFDA is the Office of U.S. Foreign Disaster Assistance. This information can be found in the Field Operations Guide online at: <https://relief.unboundmedicine.com>.

Pro-words	Meaning
"Initial"	The following phonetic equivalent is to be recorded as a single letter initial
"Message"	A message that requires recording is about to follow
"Out"	End of transmission; no receipt required.
"Over"	Go ahead; or this is the end of my transmission and a reply is necessary
"Read Over"	Read back (identify which portion of message)
"Say Again"	Repeat
"Speak Slower"	Your transmission is at too fast a speed, reduce speed of transmission
"Standby One"	Stand by (wait) one minute
"That is Correct"	Correct
"This is"	From
"Time"	What follows is time of this message
"Unknown Station"	Unknown station
"Verify"	Verify with originator and repeat
"Wait"	I must pause a few seconds
"Wait Out"	I must pause longer than a few seconds
"Will Copy"	I have received your message. I understand and I will comply
"Word After"	Word after
"Word Before"	Word before

The numeral '0' is always spoken as 'zero,' never as 'OH.' When the numeral '0' is written, it always has a slant bar through it so it is not confused with the letter 'O.'

When broadcasting sequential alphanumeric characters, enunciate each numeric carefully. Say each alpha character using its phonetic word. The number 1B3BG26SXGX545716 would be broadcast as "1 BRAVO 3 BRAVO GOLF 2 6 SIERRA X-RAY GOLF X-RAY 5 4 5 7 I 6." Note that each number is pronounced separately. You would **not**, for example broadcast this as "1 BRAVO 3 BRAVO GOLF TWENTY-SIX SIERRA X-RAY GOLF X-RAY FIFTY-FOUR FIFTY-SEVEN SIXTEEN".

Dos and Don'ts of Radio Communications in Emergencies

Always

- Maintain a constant radio watch. The radio is there to receive messages.
- Identify your station.

- Follow standard voice procedures during transmissions.
- Use the phonetic alphabet to spell out important words.
- Call out numbers individually.
- Use Pro-words to make messages shorter.
- Answer calls in the correct order and without delay.
- Restrict yourself from needless communication. This blocks valuable radio time.
- Remember to release the Push-to-Talk button after speaking so the frequency is not blocked.

Never

- Never engage in unduly long or unnecessary conversations.
- Never identify yourself by name or any other individual names.
- Never speak faster than the station experiencing the worst reception conditions can receive. This avoids needless repetition.
- Never swear or lose your temper during transmission.

It is important to:

- Speak slowly - at a copying speed - in short phases.
- Be natural. Maintain a normal speaking rhythm. Send your messages phrase-by-phrase instead of word-by-word.
- Speak in a moderately strong voice to overcome background noise.

Radio Communications with Designated Medical Working Areas in an MCM Response

Area Call	Location	Station ID
Field Response: <ul style="list-style-type: none"> AMP (Advanced Medical Post) Field Coordinating Center 	Closest safe suitable point to the impact zone. Close to coordinators of other response agencies at Incident Command. May be close to AMP but not mandatory.	'AMP' 'Medical Field Command'
Transport: <ul style="list-style-type: none"> Ambulances 	En route	'Medic 1 (or 2, 3, etc.)'
Hospital Response: <ul style="list-style-type: none"> Emergency Department Hospital Coordinating Centre 	Hospital Hospital Command Post	'Medic Base' 'Hospital Command'
Dispatch Centre: <ul style="list-style-type: none"> Medical Dispatch 	Dispatch	'Control'

Some letters and numbers may sound alike when spoken over the telephone or radio. Use the standard phonetic alphabet to help to clarify this problem. Below is the standard phonetic pronunciation for the letters of the alphabet.

International Phonetic Alphabet

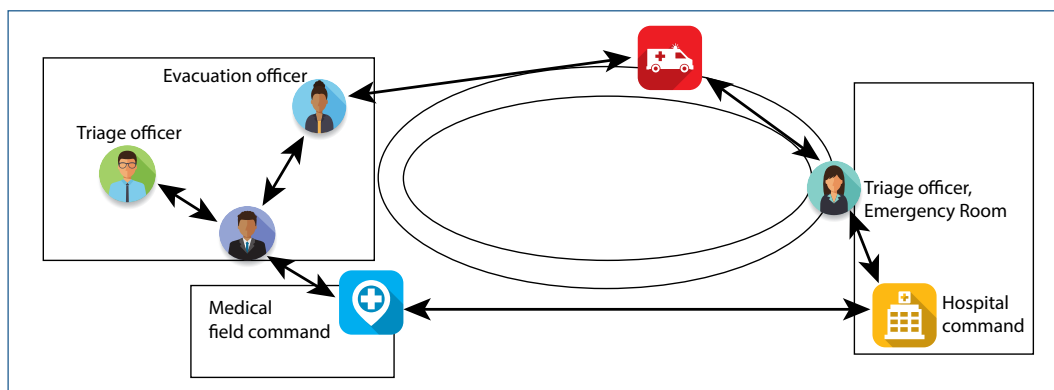
A	ALPHA	(AL fah)	N	NOVEMBER	(no VEM ber)
B	BRAVO	(BRAH voh)	O	OSCAR	(OSS cah)
C	CHARLIE	(SHAR lee)	P	PAPA	(pah PAH)
D	DELTA	(DELL tah)	Q	QUEBEC	(keh BECK)
E	ECHO	(ECK oh)	R	ROMEO	(ROW me oh)
F	FOXTROT	(FOKS trot)	S	SIERRA	(see AIR rah)
G	GOLF	(golf)	T	TANGO	(TANG go)
H	HOTEL	(hoh TELL)	U	UNIFORM	(YOU nee form)
I	INDIA	(IN dee ah)	V	VICTOR	(VIK tah)
J	JULIET	(JEW lee ETT)	W	WHISKY	(WISS key)
K	KILO	(KEY loh)	X	X-RAY	(ECKS ray)
L	LIMA	(LEE mah)	Y	YANKEE	(YANG key)
M	MIKE	(mike)	Z	ZULU	(ZOO loo)

Some agencies (usually police and fire) use a “ten- series” code system, where the meaning of each “ten-number” is understood, e.g., 10-4 means “I heard your last transmission” or “I understood your last transmission.” The same ten-number may have different meanings for different agencies. **It is therefore best to avoid it altogether in disaster situations in which radio channels are shared.**

Examples of ten-series (police) include the following:

- 10-1 Volume and clarity report
- 10-2 Request talk through
- 10-3 Wait out
- 10-4 Acknowledgment
- 10-5 Come in

Figure 6.2 Example of Communication Linkages between Field and Hospital



Notes

Review Questions

1. Using the International Phonetic Alphabet, the word "PLAZA" is spelt:
 - a. Pearly - Lima - Alpha - Zulu - Alpha
 - b. Pearly - Lotta - Alpha - Zulu - Alpha
 - c. Papa - Lima - Alpha - Zulu - Alpha
 - d. Papa - Lotta - Alpha - Zulu - Alpha
2. Which of the following is true about communications in MCIs:
 - a. Only radios should be used to communicate.
 - b. The 'ten-series' model is the most reliable.
 - c. Any available working communication system can be used.
 - d. All of the above.
3. The Initial Assessment Team must radio or call Base with information on:
 - a. Safe access routes to the site for reinforcing staff.
 - b. Additional resources required at the site.
 - c. Estimated number of victims.
 - d. All of the above.
4. In radio talk, "Wait Out" means:
 - a. "I need a few seconds to get that answer."
 - b. "You need to step outdoors and wait for your call."
 - c. "Your partner is waiting outside for you."
 - d. "Keep waiting until I come outside."
5. Which of the following is correct about handheld VHF radios?
 - a. They have a battery, which needs to be charged just once.
 - b. There is a PTT button, which must be released during transmission.
 - c. The location of the operator may affect reception.
 - d. They can transmit and receive simultaneously.
6. In a mass casualty situation, the First Aiders:
 - a. Must not try to give information.
 - b. May have important information to share.
 - c. Should speak using ten series code.
 - d. Need to stay out of the way of other responders.



Principles of Triage / First Triage

Lesson Objectives

- Define triage in the mass casualty setting.
- Describe the concept of first triage and where in the field it is performed.
- Recognise acute vs. non-acute patients.
- Understand the concept of continuous triage.
- List criteria to categorize the severity of victims.

Triage

Triage is the process of determining the priority of patients based on the severity of their conditions, in order of priority, for immediate movement and treatment. Triage is used in hospital emergency rooms and at incident sites. In the mass casualty setting, it is based on urgency, the likelihood of survival and the care resources that are available. It is an ongoing process along the rescue chain. Remember that the medical condition of trauma victims is not static and may change from instant to instant. Frequent reassessment is needed. Likewise, triage is not static and must be revised from time to time. **Triage involves a dynamic balance between needs and resources.**

- **Needs** – number of injured and types of injuries.
- **Resources** – infrastructure and equipment at hand and competent personnel present.

Triage cannot be ad hoc; it requires planning, personnel, equipment, supplies and security. Triage must be efficient and effective and therefore requires trained personnel. Laypersons can be trained to do initial field triage in mass casualty incidents, as they are often first on the scene and likely to be available in higher numbers. However, responders must be aware of the risk and dangers that may occur due to relatives or armed spectators.

Triage activity involves:

- **Obtaining** a focused history of the mechanism of injury (what happened?)
- **Performing** a limited initial assessment on victims (how unstable are the injuries?)
- **Classifying** the patients problems according to urgency (two levels in impact area; four levels at AMP).
- **Reassuring** patients that they will receive medical care as soon as possible and guiding their movement from the impact zone, through the AMP, to the receiving medical facility.

In the PAHO model, triage is typically repeated a further three times along the rescue chain.

- **First Triage**, also referred to as field triage, is performed at the impact zone.
- **Second Triage** occurs at the entrance to the AMP and is performed by the most senior medical person available. It prioritizes for field treatment, consisting of stabilization in the AMP.
- **Third Triage** is performed inside the AMP, after stabilization has occurred. It prioritizes for evacuation.
- **Fourth Triage** is performed at the entrance to the hospital. It prioritizes for resuscitation and surgical intervention in the hospital setting.

Second, Third and Fourth triage all use designations for **four levels** of urgency (first triage uses two). These are **red** for critical, **yellow** for urgent, **green** for non-urgent, and **black** for dead. Triage requires a standardized system of tags; all members of the local response services should be very familiar with these tags.

Triage begins at the point of injury and occurs all along the rescue chain to hospital reception and continues inside of the hospital.

The **sift and sort approach** is a process used for prioritizing casualties. This means to separate or select.

- **Sift:** Select those most severely injured first, identify and remove the less injured and the uninjured; and identify the dead.
- **Sort:** Categorise the most severely injured, based on life threatening conditions (ABC), site of injury, supplies and resources available.

First Triage

The initial survey of a patient considers the "A₂BC₃":

Ambulating * Airway * Breathing * Circulation * Consciousness level * Cervical spine

Criteria for First Triage include:

- A = Airway
- B = Breathing
- C = Circulation
- D = Doubt
- E = Exceptions – potential problems
- F = Foreign bodies

Patients should be coded early; those in dangerous areas should be removed to a non-hazardous environment before triage. First level triage focuses on identifying threats to life, limb or sight and is performed at the impact zone.

In First level triage, patients are classified as **ACUTE** (red) or **NON-ACUTE** (green) and prioritized for movement to the entrance of the AMP. Red level patients need prompt care and are moved as first priority. Green level patients are comparatively less urgent and are moved secondarily.

Key Points For Tagging Acute Victims

Identify any threat to:

- Life
- Limb
- Sight!

Look For	<ul style="list-style-type: none"> • Ability to ambulate or talk • Skin/lip colour • Level of consciousness or ability to answer • Quality and rate of breathing • Uncontrollable bleeding
Feel For	<ul style="list-style-type: none"> • Skin moisture • Pulse quality • Breathing

Upon approaching the impact zone, quickly identify a "safe" area. (The choice of a location for the safe area will depend on the type of incident.) Ask all victims who are able to walk to move towards this area. This will rapidly separate the mobile from the less-mobile victims. Remaining victims must then be rapidly assessed. If there

are no signs of breathing, open the airway. If there are still no signs of breathing, tag the person as green and move on to the next victim.

Other patients will then be further assessed, according to the respiratory rate, condition of pulse, condition of skin, the degree of burns and the presence of external bleeding. A 'guesstimate' of the total percentage burns to a body can be determined by using the area of the patient's palm as equal to 1% total body surface area (BSA) for 2nd, 3rd and 4th degree burns. (Superficial, or first degree burns are not taken into account in determining these percentages.) Total burns >40% in adults or >10% in children are deemed acute. Victims deemed acute are tagged with red ribbons or designated red tags. All others will be given green ribbons or designated green tags. See Figure 7.1. The section on Estimation of Percentage of Burns to the Body in Unit 8 provides more information on this issue.

Note: Following medical assessment and when transport is available, green-tagged victims may be transported from the holding point to an alternate medical facility, if one is available. They should not be taken to the hospital. This may alleviate psychological stress on the victims caused by having to witness others with serious injuries.

Figure 7.1 Examples of Triage Tags and Ribbons

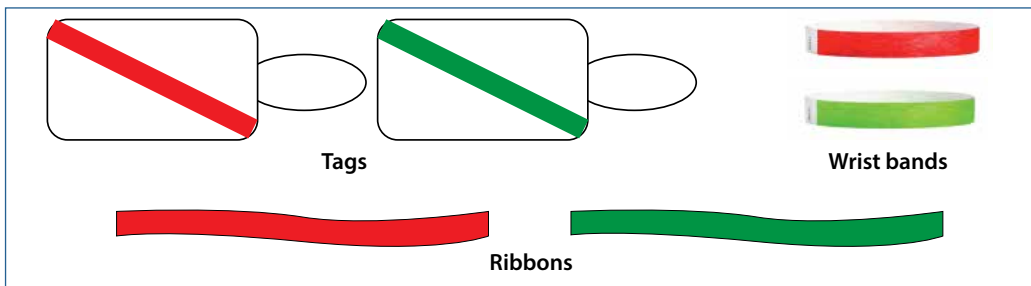
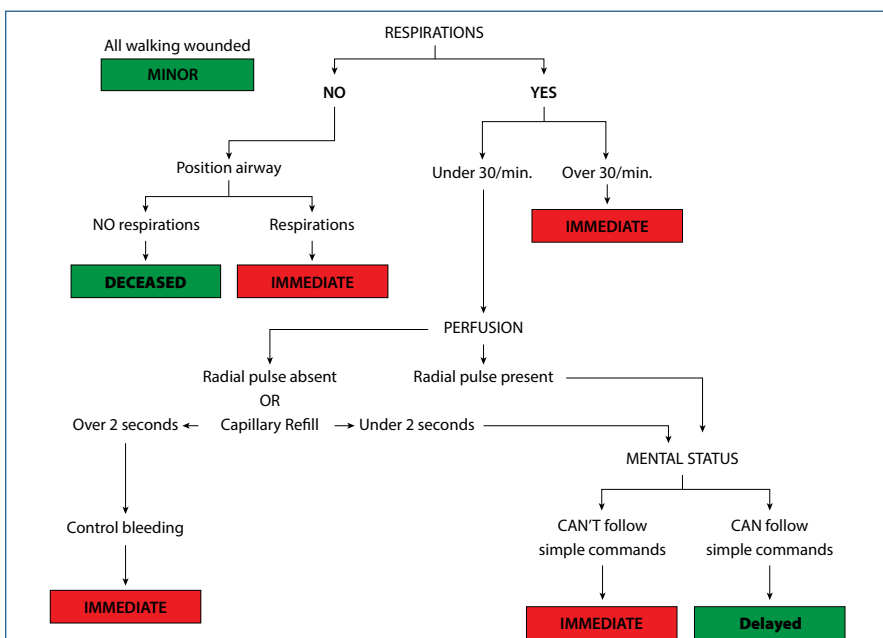


Figure 7.2 Flow Chart for Basic First Triage following Trauma (excludes burns)



The following is a suggested sequence of questions to help determine acute vs. non-acute victims during first level field triage. Acute patients are labeled red; non-acute patients are labeled green.

Questions	Deductions
Can they walk?	They are likely non-acute. Guide them to a safe shaded area.
Can they talk normally?	Then they have a good airway. If not, they are acute.
Do they have a good skin colour?	They have good air exchange. Check respiratory rate (RR).
Is RR >30/min in adults?	Then they are acute.
Is RR > 45/min or <15/min in child?	Then they are acute.
Is there evidence of facial burns?	Then they are acute.
Is the pulse too slow, too fast or too weak?	Then they are acute.
Is the skin cool and sweaty at rest?	Then they are acute.
Are long bones, or pelvis deformed or very swollen?	Then they are acute.
Is there > a cup of bleeding from any body orifice?	Then they are acute.
Is the abdomen distended/painful?	Then they are acute.
Is there any unstoppable external bleeding?	Then they are acute.
Are they drowsy, confused or agitated?	Then they are acute.
Is an injured limb numb or lacking a pulse?	Then they are acute.
Are they complaining of decreased vision?	Then they are acute.
Are burns > area the size of chest and abdomen?	Then they are acute.

Some examples of acute patients:

- Unresponsive adult, breathing on his/her own or when airway opened.
- Unresponsive child, breathing on own or after 5 rescue breaths.
- Restless and sweaty.
- Confusion in the absence of the smell of alcohol.
- Weak, thready pulse.
- Suspected or obviously broken thigh, rib or pelvis.
- Chest injury that affects breathing.
- Heavy bleeding that does not stop, despite pressure and elevation.
- Moderate to heavy bleeding from ears, nose, mouth, anus or vagina.
- Any pregnant victim with abdominal pain +/- vaginal bleeding/fluid from vagina.
- Pain and/or stiffness of the abdomen.
- More than 25% but less than 60% moderate/severe burns in an adult.

- More than 10% but less than 75% moderate/severe burns in a child.
- Singeing of facial hair ~ Burns to face ~ Soot in the spit.

First Triage

- Prioritizes victims for movement to the entrance of AMP.
- Is best performed by first responders and trained laypersons.
- Victims are classified as **RED** or **GREEN**; acute or non-acute.
- Looks at threats to life, limb or sight – in that order.

Notes

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Review Questions

1. First Triage categorizes patients as:
 - a. Survivable and non-survivable.
 - b. Acute and non-acute.
 - c. Red, Yellow, Green and Black.
 - d. Treat or do-not-treat.
2. Which one of the following can be classified as non-acute in a mass casualty setting?
 - a. 15-year-old with 60% second degree burns.
 - b. 40-year-old with chest injuries and respiratory distress.
 - c. 60-year-old with lacerated abdomen and visible bowel.
 - d. 3-year-old child with >90% third degree burns.
3. First Triage or Field Triage:
 - a. Is performed by first responders.
 - b. Includes tagging victims red or green.
 - c. Will select and send the most seriously injured victims to the AMP first.
 - d. All of the above are correct.
4. The First Aider's supervision of a victim in the field ends when:
 - a. The Police arrive.
 - b. The Ambulance arrives.
 - c. The victim is handed over to an EMT/Nurse.
 - d. When the shift is over.

Answer Key: 1 - b; 2 - d; 3 - d; 4 - c



Second Triage and Advanced Medical Post

Lesson Objectives

- Understand the concept of continuous triage.
- Understand the concept of the four levels of Second Triage.
- Practice the triage process on simulated patients.
- Utilize field skills to achieve and maintain acceptable vital signs.
- Understand the need for and methods of setting up an Advanced Medical Post (AMP).
- Describe the advantages of the AMP in the context of challenged resources.
- Define the role and responsibilities of an AMP manager.
- Understand the need for initiating the documentation of patient information.

Second Triage

Triage is not a static process, especially in a trauma setting, as the victim's vital signs will change as the illness or injury evolves. Second triage, usually referred to as medical triage, is done at the entrance to the Advanced Medical Post (AMP). It involves a secondary survey by a medically trained individual. While first triage uses a two-colour code system (red and green), second triage uses a four-colour code system, (red, yellow, green and black). It prioritizes according to the promptness of the need for treatment inside the AMP. Red patients need the quickest care, within 5 to 30 minutes, to maintain their vital signs. Yellow patients can tolerate delayed interventions, but may become unstable within 2 hours. Green patients are comparatively less urgent and considered medically stable for up to 6 hours; these are your 'walking wounded.' Black patients are lifeless and can be certified dead.

Second triage focuses on identifying threats to life, limb, sight and how long the patient is likely to remain stable. Good clinical experience is a prerequisite to making this judgment call; hence the most experienced medical person on scene should take the role of triage officer.

A good Second Triage Officer should have the following attributes:

- Sound clinical experience.
- Well recognized – commanding respect.
- Good leadership skills.
- Decisive.
- Good knowledge of local medical resources.
- Good judgment.
- Remain cool under stress.
- Able to anticipate casualties.
- Imaginative and creative in problem-solving.
- Good sense of humor.
- Availability.

The field survey considers the "A₂BC₃."

Ambulating * Airway * Breathing * Circulation * Conscious level * Cervical spine

Look at vital signs and clinical indicators such as skin/lip colour, breathing quality, skin moisture, pulse quality, conscious level (use AVPU – Alertness; Verbal response; Pressure/Pain response; Unresponsiveness) or the Glasgow Coma Scale (GCS) to grade level of consciousness.

Key Points in Second Triage Tagging

Identify threats to:

- Life
- Limb
- Sight

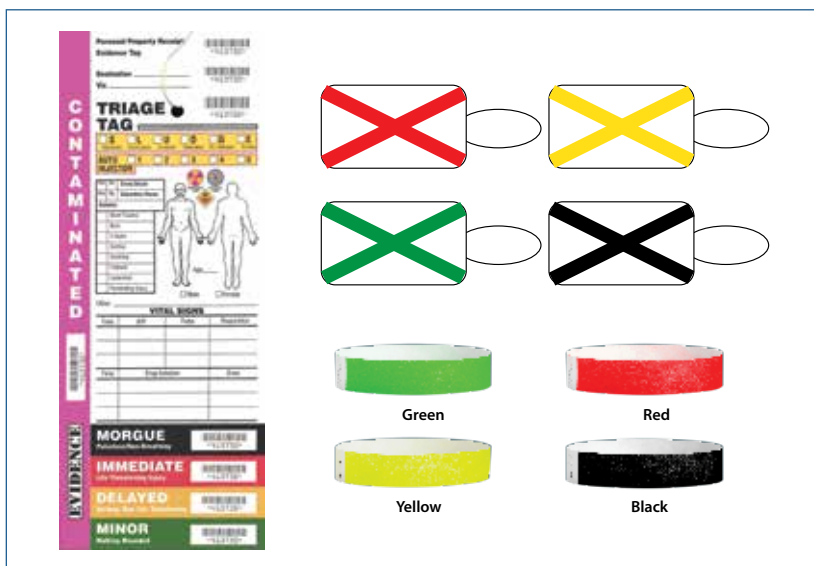
Identify how much "stable" time the patient may have.

Look For	<ul style="list-style-type: none"> • Level of consciousness (AVPU OR GCS) • Respiratory rate and quality • Uncontrollable bleeding
Feel For	<ul style="list-style-type: none"> • Skin moisture • Pulse quality • Breathing

- **RED** denotes **critical** cases, which require intervention within 5–30 minutes to prevent serious compromise.
- **YELLOW** denotes **urgent** cases that are likely to remain stable for up to two hours.
- **GREEN** denotes **non-urgent** cases that are likely to remain stable for up to six hours.
- **BLACK** denotes **dead**, patients who are clinically dead.

Below are examples of different tags that can be used for the second triage.

Figure 8.1 Examples of Second Level Triage Tags



Under the PAHO model of a Mass Casualty System, a fifth designation is acceptable when appropriate. This designation indicates the hopeless breathing victims, who, based on the triage officer's experience, are "likely (or bound) to die" (BTD). These victims are tagged "Yellow Prime" and are given medical attention only after all red and yellow-tagged victims have received stabilizing measures. (In some triage models they are referred to as "expectant" or "imminent" dead and may be classified with a yellow tag with a black stripe or given a purple tag.)

Indicators of Possible Internal Bleeding:

- Skull wounds (not scalp wounds).
- Blood in the ears.

- Vomiting blood or coughing up blood.
- Evidence of large neck bruises.
- Penetrating chest or abdominal wounds.
- Abdominal guarding (stiffness).
- Abdominal tenderness (pain on touch).
- Excessive vaginal bleeding.
- Any rectal bleeding.
- Fractures of long bones OR pelvis OR ribs.

Table 8.1 Features of the Four Classes of Haemorrhagic Shock

Class	I	II	III	IV
Blood loss % (ml)	<15% <750	15 - 30% 750-1500	30 - 40% 1500-2000	>40% >2000
Pulse rate	slight increase	increased	marked increase	decrease
Blood Pressure	normal	normal/increase	decreased	markedly decreased
Respiration	normal	increased	markedly increased	decreased
CNS/Mental Status	normal	anxious, irritable	confused	unresponsive
Typical Outcome	readily reversible	reversible	possibly reversible	mostly irreversible

To avoid pitfalls:

- Always validate what you are hearing or seeing.
- Remember what you see is seldom the whole picture.
- Conduct a thorough but rapid screening assessment.
- Avoid tunnel vision.
- Look for causes and consider the mechanism of injury.
- Do not rule out a condition just because a typical symptom/sign is absent.
- Remember all psychiatric patients eventually die of organic disease.
- When someone is calling for help, the burden of proof is not his or hers!

The Principle of the '3-Ts':

- Tag
- Treat
- Transfer

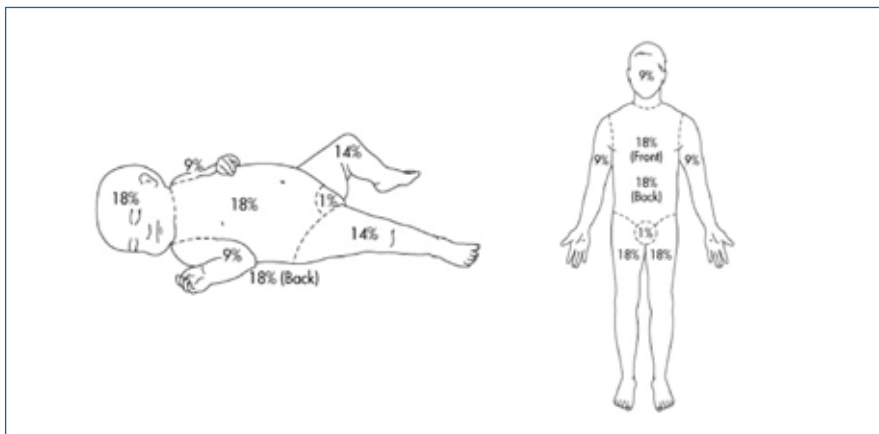
Estimation of Percentage of Burns to the Body

The depth and amount of burns to the surface area of the body are good indicators of the likelihood for survival and the level of critical care that is needed. Burns to the face and respiratory tract, indicated by singeing of facial hair or soot in spit, is a good indicator of the likely development of respiratory compromise at a later stage.

The “**Rule of Nines**” can be applied to quickly ‘guesstimate’ the percentage of burns. Only second, third or fourth degree burns are considered for the total. The adult head and upper limbs are **each** approximately 9% of the total Body Surface Area (BSA). The back of the torso, front of the torso, and the lower limbs are each 18% of the total BSA, while the genitalia is approximately 1%.

In children/infants, the head is proportionately a larger part of the total BSA. As children age, their torso and limbs lengthen and the head-to-limbs-to torso proportions change.

Figure 8.2 Standard Anatomical Body Positions



In the newborn, the head is 19% of its BSA; the lower limbs are 25% (12.5% for each lower limb). With each additional year in age, subtract 1% from the head % and add to the sum of the lower limbs. The torso remains 36% BSA (front and back), upper limbs are 9% each and genitalia 1% BSA. So a 2-year-old would have a head BSA of 17 % (19-2), while the sum of the lower limbs will be 27% of the BSA (25 + 2), torso, upper limbs and genitalia will be 36%, 9% and 1 % respectively.

Burns are classified as follows:

- **Superficial or first degree**, when there is just redness of the skin with blanching on pressure, and pain. ***This is not added to the percentage total body surface area burns.***
- **Partial thickness or second degree**, when there is blistering. There may be redness, +/- blanching and usually pain.
- **Full thickness or third degree**, when the skin is white or charred with a leathery appearance. There is usually no pain.
- **Fourth Degree**, when there is obvious involvement of muscle and bone.

Related Signs and Symptoms to Possible Diagnoses

Pulse (vital sign)

- **Rapid, full:** fear, overexertion, heat stroke and advanced heat exhaustion, high blood pressure, early signs of internal bleeding.

- **Rapid, thready:** shock, blood loss, developing heat exhaustion, diabetic coma (hyperglycemia), falling blood pressure.
- **Slow, full:** stroke, skull fracture.
- **No pulse:** carotid = cardiac arrest; distal = injury to the extremity (usually a fracture or dislocation) or shock with low blood pressure.

Respiration (vital sign)

- **Rapid, shallow:** shock, heart problems, heat exhaustion, insulin shock (hypoglycemia), congestive heart failure.
- **Deep, gasping, labored:** airway obstruction, congestive heart failure, heart problems.
- Lung disease or injury from excessive heat, chest injuries, diabetic coma (hyperglycemia).
- **Snoring:** stroke, fractured skull, and drug or alcohol abuse, airway obstruction.
- **Stridor:** high-pitched sounds on inspiration.
- **Crowing:** atypical breathing sound indicating airway obstruction.
- **Gurgling:** liquid in the airway (e.g., vomitus, blood, inability to clear normal secretions), usually due to impaired mental status; airway obstruction; lung disease; lung damage; fluid in lung from pulmonary edema.
- **Coughing blood:** chest wound, rib fracture, internal injuries.

Skin Temperature (vital sign)

- Cool, moist: shock, bleeding, loss of body heat, heat exhaustion.
- Cool, dry: exposure to cold.
- Cool clammy: shock.
- Hot, dry: heat stroke, high fever, chemical (pesticide) exposure.
- Hot, moist: heat exhaustion or heat stroke (heat stroke may be either sweaty or dry), infectious disease.

Skin Color (vital sign)

- **Red:** high blood pressure, heart attack, heat stroke, diabetic coma, minor burn, fever or infection, allergic reaction.
- **White, pale, ashen:** shock, heart attack, excessive bleeding, heat exhaustion, fright, insulin shock.
- **Blue:** heart failure, airway obstruction, lung disease, shock, certain poisonings.

Pupils of the Eyes (vital sign)

- **Dilated, unresponsive to light:** cardiac arrest, unconsciousness, shock, bleeding, heat stroke, drugs.
- **Constricted:** damage to the central nervous system, drugs (heroin, morphine, codeine).
- **Unequal:** stroke, head injury.

Level of Consciousness

- **Confusion:** fright, anxiety, minor head injury, alcohol or drug abuse, shock, epilepsy, mental illness.
- **Stupor:** head injury, alcohol or drug abuse, stroke.
- **Brief unconsciousness:** head injury, fainting, epilepsy.
- **Coma:** stroke, allergy, shock, head injury, poisoning, drug or alcohol abuse, diabetic coma, heat stroke or advanced heat exhaustion, anaphylaxis (allergy shock), heart attack.

AVPU Levels of Consciousness

- A = Fully alert
- V = Responds to speech (verbal command)
- P = Responds to pain only
- U = Unresponsive to pain or voice

Table 8.2 Glasgow Coma Score (Total Score: 15)

Eye Opening (4)	
Spontaneous	4
To voice	3
To pain	2
None	1
Verbal response (5)	
Oriented	5
Confused	4
Inappropriate words	3
Incomprehensible	2
None	1
Motor response (6)	
Obeys commands	6
Localizes to pain	5
Withdraws to pain	4
Flexes to pain	3
Extends to pain	2
None	1

Figure 8.2 Second Triage Categories

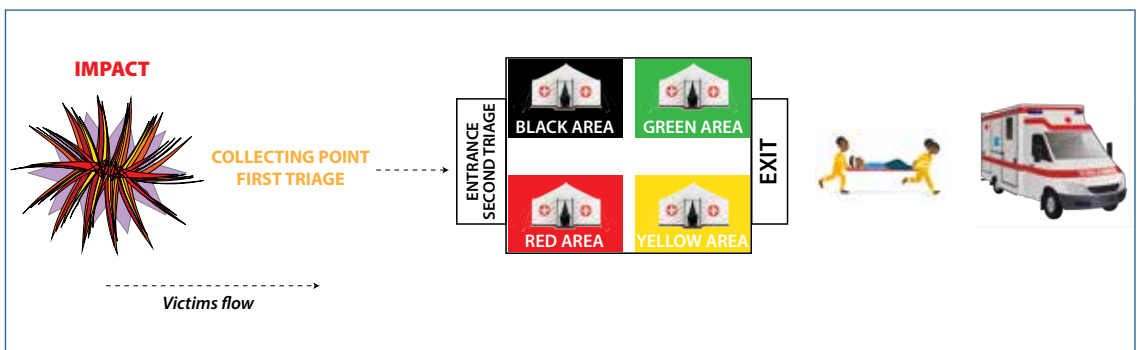
RED	CRITICAL: Casualties who require intervention in 5–30 minutes.
YELLOW	URGENT or BTD (Yellow Prime): <ul style="list-style-type: none"> Casualties who are stable but could become unstable without intervention in 2 hours. Casualties not expected to survive due to severity of injuries and lack of resources.
GREEN	NON-URGENT: Individuals with stable injuries with no medical change anticipated for 6+ hours.
BLACK	DEAD

Advanced Medical Post (AMP)

The Advanced Medical Post (AMP) is an extension of the Emergency Department and functions as a field hospital. This treatment area is staffed by doctors, nurses, paramedics, records clerks, orderlies / porters, volunteers and a manager. Medical actions are geared towards ensuring a victim will tolerate transport conditions and any incidental delayed hospital treatment by providing adequate resuscitation and intervention at the field level. There should be a **clearly marked entrance** to which victims will be brought from the field for medical triage and a **clearly marked exit** through which evacuation will take place.

The AMP space is subdivided into three treatment areas for Red, Yellow and Green patients and a holding area for Black. Note that these treatment areas can be physically separate, depending on the nature of the incident, the size of the victim pool, and available treatment space.

Figure 8.3 Schematic of the Advanced Medical Post



Location of the AMP

The AMP should be located as close to the impact zone as is safely possible. There is wide latitude in selecting the site of the AMP—from any available open space, to tents, to mobile trailer space, etc. Nearby buildings can also be commandeered. The time of day and type of mass casualty incident, weather conditions, topography, and available resources will all influence the decision regarding the location of the AMP.

Staffing the AMP

The AMP manager will be designated and a pre-arranged call-out list of suitable staff and volunteers will be used to staff the AMP. The actual number of persons required in this area will vary greatly, depending on the number of victims and how many are critical (red). A rough guide for the red area is to have two nurses/paramedics per patient and one emergency doctor or equivalent. In the yellow area, an estimated ratio is one acute care nurse or paramedic per four patients and one doctor per six to eight patients.

For the green area, a 1:10 ratio of patients to general nurses and practitioners is adequate. A nurse can supervise first aid volunteers in this area. Clerks play a vital role in recording details, as data must be collected all along the rescue chain and episodically sent to the Command Post.

The efficient leadership and coordination of a strong AMP Manager will ensure the smooth operation of the AMP. He/she should have a medical background; skills in the management of pre-hospital care; a sound understanding of the principles of MCM; good knowledge of available local health resources; and skills in radio communications, logistical operations and staff management. Several other key roles include the designation of a Treatment Team leader for each area, an Evacuation Officer, a Transport Officer and Recording Clerks. See Appendix 2 for a description of the duties of these key positions.

Supplies

The resources and supplies on the first emergency response vehicles can be used initially to manage victims in the AMP. However, a **preexisting** system should be in place, designed to get additional resources to the site. This system will require significant pre-planning to determine how the required equipment and supplies can be quickly available in the AMP when needed. This process can range from a trunk of supplies to a mobile purpose-built trailer truck. Without supplies, the system will not work.

Dealing With The Dead

At the scene of a mass casualty incident, a patient is dead if they are not breathing following opening of the airway. Ideally, a medical practitioner should pronounce death, although in some mass casualty situations, this will not be practical. Therefore, in some countries, as an alternative, the most highly trained health worker present can confirm death – usually in the presence of a police officer.

The dead are the responsibility of the police. They must be clearly tagged – Black - so that resources are not used or misdirected to continually assess these casualties. The impact site may be designated a crime scene, in which case the police will give guidance on how to proceed, while limiting potential disturbance of evidence. If a temporary mortuary is necessary, the police will determine this; it will be dependent on the number of casualties. Refrigerated trucks can be sourced specifically for that purpose. The World Health Organization discourages mass burials until proper identification has been made, as this adversely affects the grieving process of survivors.

Figure 8.4 AMP Floor Plan (Open Space)

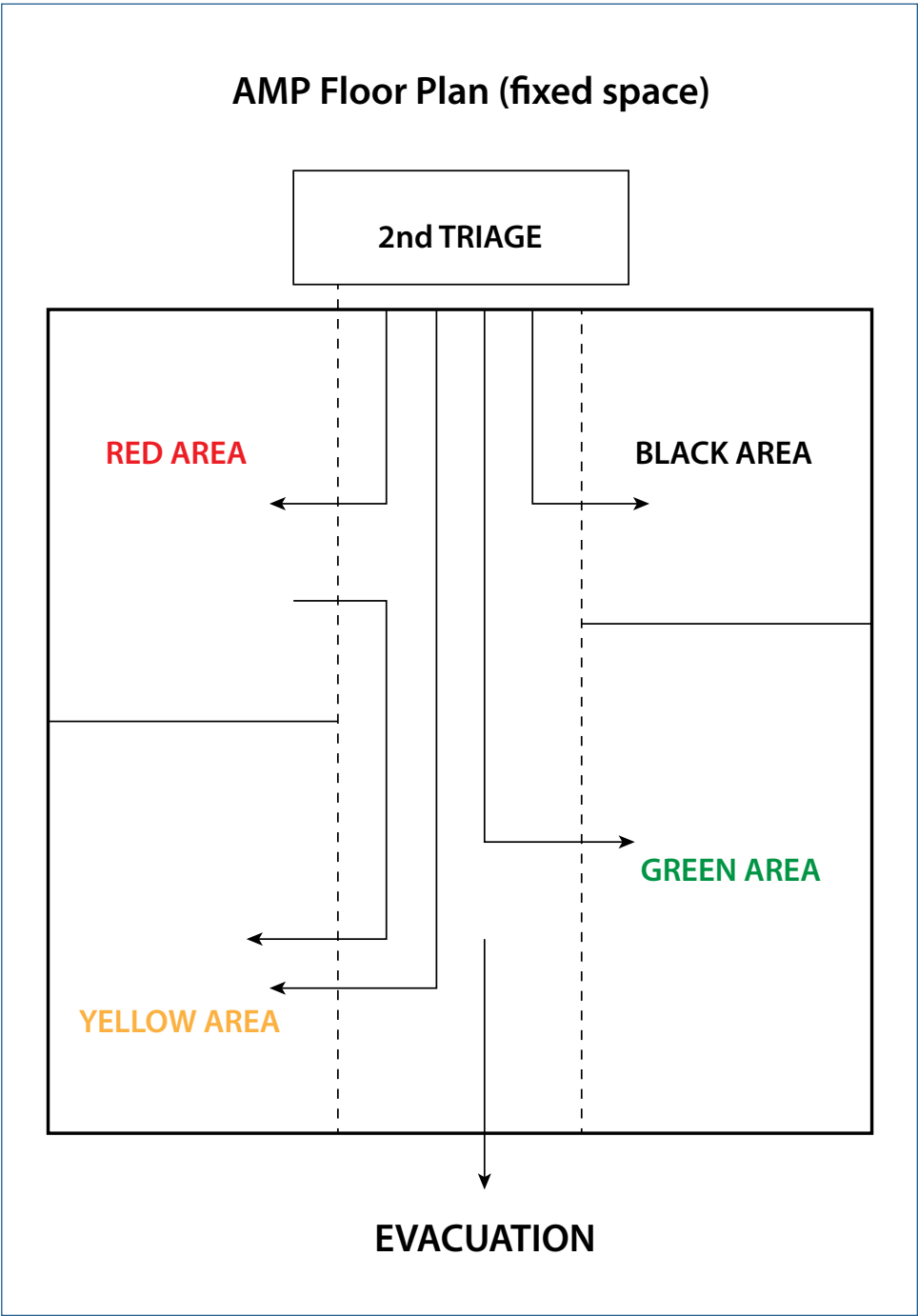
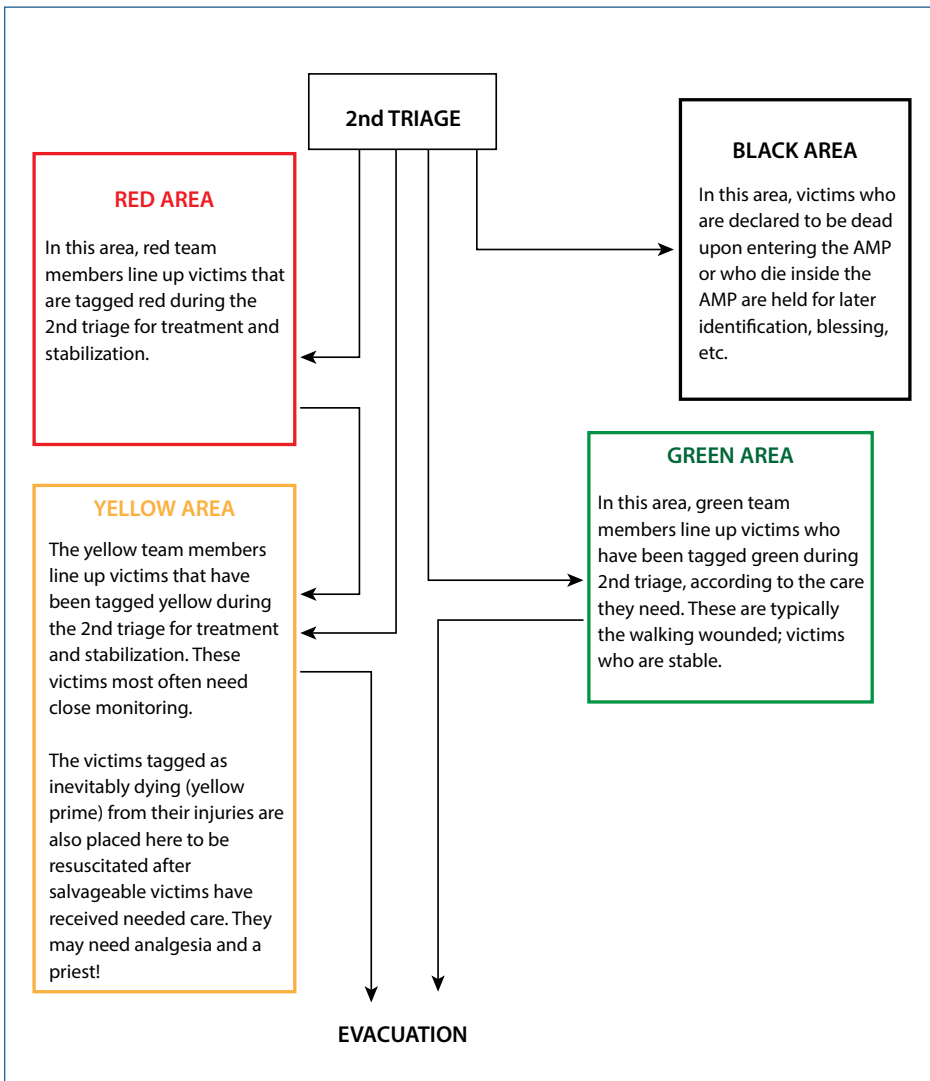


Figure 8.5 Second Triage: Description of Treatment Areas



Notes

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no vertical margin lines or other markings present. The paper appears to be a standard notebook page.

Review Questions

1. Second triage is most efficiently performed by:
 - a. A first responder.
 - b. An experienced doctor or nurse.
 - c. A fireman.
 - d. Any of the above.
2. The second triage uses:
 - a. Acute and non-acute designations.
 - b. Red, Yellow, Green and Black designations.
 - c. A triangle, square, a circle, and an octagonal label.
 - d. None of the above.
3. At the entrance to the AMP, a 40-year-old with chest injuries and respiratory rate of 36/minute should be classified:
 - a. Red.
 - b. Yellow.
 - c. Green.
 - d. Yellow Prime.
4. The individual who has direct responsibility for the running of the AMP is the:
 - a. AMP Manager.
 - b. Doctor conducting medical triage.
 - c. The Evacuation Officer.
 - d. Incident Commander.
5. The "3 T Principle" is:
 - a. Transport, Treat, Triage.
 - b. Tag, Treat, Transfer.
 - c. Triage, Treat, Transport.
 - d. Triage, Treat and Take Home.

Answer Key: 1 - b; 2 - b; 3 - a; 4 - a; 5 - b



Overview of the Incident Command System

Lesson Objectives

- Define an Incident Command System (ICS).
- Describe the basic features of ICS.
- Identify when an ICS can be used.
- List the benefits, functions and disadvantages of ICS.
- Describe the functions of general and command staff.
- Define unified and unity of command.
- Understand the concept of an EOC.

Introduction

Incident Command is a standardized, on-scene, all hazards incident management concept that involves command, control and coordination. It provides a means to coordinate the efforts of individual agencies as they work towards the common goal of stabilizing the incident, with a view toward protecting life, property, and the environment.

The Incident Command System (ICS) allows its users to adopt an integrated organizational structure to match the complexities and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS also provides a structure and an organizational language that allows different kinds of agencies to work together effectively in response to a disaster. The goal is to simplify communications and establish clear lines of authority and command.

The ICS concept was formed in 1968, to pattern the management system of the US Navy, primarily to fight wildfires in California and Arizona. The Incident Command System (ICS) was fully developed in the 1970s following a series of catastrophic fires in California's urban areas. The National Incident Management Systems (NIMS) provides a template that enables government and non-governmental organizations to work together while mitigating the effects of incidents.

The UK Metropolitan Police created the Gold - Silver - Bronze command structure in 1985. This system is used by emergency services in the UK to establish a framework for the command and control of major incidents and/or disasters. Police personnel and some fire departments also use this structure in the Caribbean. Gold (strategic), 'Silver' (tactical) and 'Bronze' (operational) are titles of the functions adopted by each of the emergency services. These designations are role related, no rank related.

- **Gold** is the commander in charge overall of each service, responsible for formulating the strategy for the incident. He/she has command of their own organization's resources, but delegates tactical decisions to his/her respective Silver(s).
- **Silver** will attend the scene, take charge and be responsible for formulating the tactics to be adopted by their service to achieve the strategy set by Gold. Silver should not become personally involved with activities close to the incident, but remain detached.
- **Bronze** will control and deploy the resources of their respective service within a geographical sector or specific role and implement the tactics formulated by Silver.

Whether it be the UK model or the US model, the structure and functions are the same. The organizational structure is built around five major management activities. Not every disaster or emergency will require the activation of all five activities. A similar unit can be set up at the institutional level to coordinate the institution's disaster response, e.g., a Hospital Command Post.

Each responding agency or department should have a representative in the Command Post. For the field, that would be fire, health, police, defense force, coastguard/marine etc. For the hospital it would be critical care, medical, surgical, administration, quality and risk, etc. In a field response, these persons provide a vital link between needs in the field and the recruitment of additional resources. The Incident Coordinator in the Command Post could be the most senior officer on site

Functional requirements,
not titles, determine the
organizational hierarchy
of the ICS structure.

from the most critical agency or department in terms of the response, e.g., the senior fire officer in a chemical spill or the senior police officer during civil unrest.

All external communications out of the field or the institution should pass through the Incident Command post.

Medical responders must adhere to the ICS system, if it has been activated, to avoid any negative consequences, including: death of medical personnel due to lack of safety and training; the lack of adequate medical supplies to provide care; and staff performing duties beyond their training.

Benefits of the Incident Command System

Using best management practices, the ICS helps to ensure the safety of responders and other actors; allows for the achievement of tactical objectives; and the efficient use of resources.

ICS Purpose

The ICS is an interdisciplinary and flexible management system and can be adapted to an incident of any size or kind.

- It allows other agencies and organizations to meld into the management structure.
- It can be used for any type of incident, large or small, e.g., planned events, training exercises, response to natural hazards, mass casualty incidents, hazardous materials incidents (Hazmat), private sector emergency management programs, etc.

ICS Structure

The organizational structure of the Incident Management System is modular. The system's five major management activities are: incident command; operations; planning; logistics; and finance/administration. The structure of ICS remains the same, regardless of the nature of the disaster. The difference is in the particular experience of the key personnel. Figure 9.1 depicts the hierarchy of the ICS.

The Incident Command System has many advantages: it prevents chaos, deters individualism, prevents injury or further damage, and helps to avoid the prolongation of a mass casualty incident.

Figure 9.1 Hierarchy of the Incident Command System

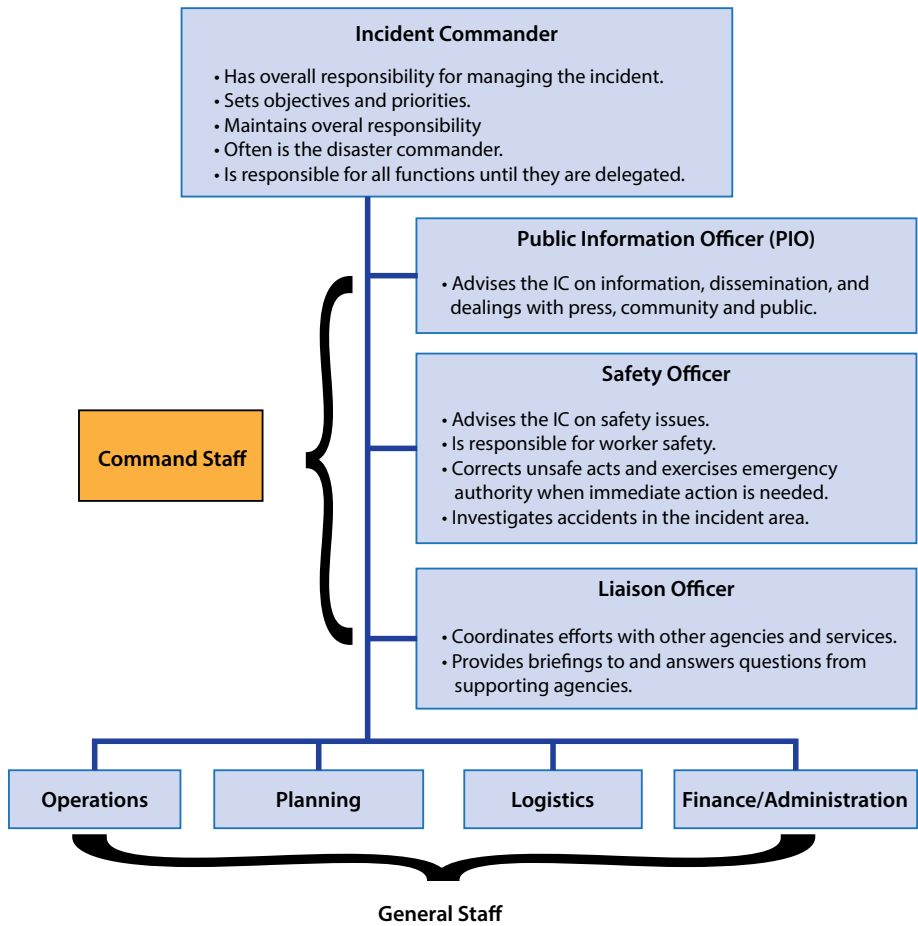
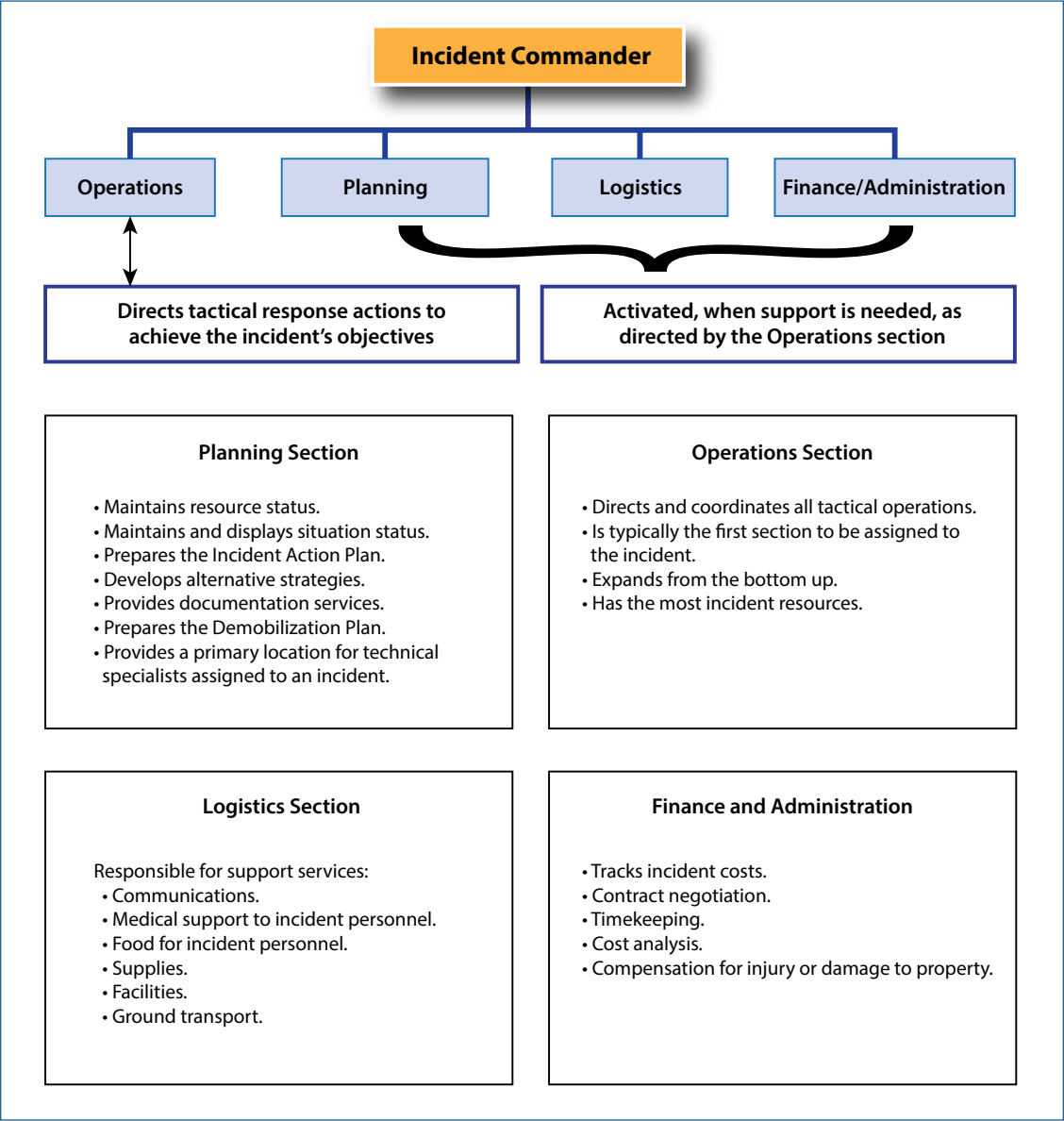


Figure 9.2 General Staff Management Functions



Incident Commander (coordinator of the Command Post)

The Incident Commander has overall responsibility for managing the incident. He/she establishes objectives, plans strategies; and implements tactics. This is the only position that is always staffed in ICS. The Incident Commander is responsible for all ICS functions until the functions are delegated to others. The Incident Commander should possess these attributes: assertive, decisive, objective, calm, quick thinker, adaptable, flexible, realistic and capable of delegating roles and responsibilities. He/she must:

- Perform overall coordination of the field operations.
- Receive reports from the other officers in the command post.
- Continuously assess the general situation.
- Coordinate requests between sectors in field.
- Ensure links between sectors.
- Ensure the welfare of all staff involved in field operations.
- Liaise with central headquarters and EOC.
- Authorize releases to the media.
- Act as a link between field operation and backup system.
- Ensure adequate radio communication.

Span of Control

Although there are no hard-and-fast rules, only the necessary functions or positions of the ICS are activated. Each element must have a person in charge; the span of control must be maintained effectively. In the ICS, the span of control for any supervisor is between three and seven subordinates; the optimal number being five.

Chain of Command

The chain of command is the orderly line of authority within the response organization. It allows incident managers to direct and control the actions of all personnel under their supervision. It avoids confusion by requiring that orders flow from supervisors and does not prevent personnel from sharing information.

Unity of Command

Unity of command means that every individual has a designated supervisor to whom they report at the scene of the incident. All work assignments are given by their supervisor.

Unified Command

A unified command enables all involved agencies to manage an incident jointly, by establishing a common set of incident objectives and strategies. It allows Incident Commanders to make joint decisions by establishing

a single command structure, while maintaining unity of command. Each participating agency maintains its individual authority, responsibility, and accountability.

In a unified command, jurisdictions and/or agencies blend into an integrated, unified team. The mix of participants depends on the location and type of incident. Members must function together as a team

Emergency Operations Center

The Emergency Operations Center (EOC) is the protected site location where management decisions are made and coordinated responses to an emergency incident are orchestrated.

An EOC is designed and equipped to provide staff support to the National Disaster Management Office, helping to guide the coordination and response to emergency incidents. It supports the Government's emergency response efforts by utilizing both government and NGO resources to strategically manage the incident, including localized mitigation, response and recovery efforts.

The EOC may be established at the regional or at the local level. An EOC may range in size from dual-use conference rooms to a complete stand-alone facility. The main functions of an EOC are to receive, monitor and assess disaster information, track available resources, assist in making policy decisions and proclaiming local emergencies as needed.

Notes

[illegible]

Review Questions

1. The Command Post:
 - a. Is situated in the impact zone.
 - b. Is situated in the nearest police station.
 - c. Is not needed in mass casualty incidents.
 - d. Is situated in the restricted area.
2. In the Command Post, the Incident Commander:
 - a. Is the Health Disaster Coordinator.
 - b. Is the most senior Police Officer.
 - c. Is the Chief Medical Officer.
 - d. Is anyone with a radio.
3. The Field Incident Command Post:
 - a. Controls news released to the press.
 - b. Overrides all instructions from the Emergency Operations Center (EOC).
 - c. Can decide which patient will be sent to the hospital.
 - d. All of the above.
4. The Incident Command Post is established:
 - a. Only if there is a mass casualty incident.
 - b. If there is a multi-sectoral response to a major incident.
 - c. Only if there is a trained person present.
 - d. For all mass gathering events.
5. In a mass casualty incident with an established Incident Command, all responding agencies:
 - a. Report to the Incident Command Post.
 - b. Report only to their own bosses.
 - c. Report to anyone who appears to be in charge.
 - d. None of the above.

Answer Key: 1 - d; 2 - b; 3 - a; 4 - b; 5 - a



Third Triage, Evacuation and Transport

Lesson Objectives

- Understand the essential elements of smooth evacuation and transport.
- Describe the Noria Principle.
- Understand the concepts of the four levels of third triage.
- Understand the rationale for appropriate vehicles and personnel in the transport of victims.
- List key features of communication between field, rescue vehicles, and receiving victims.

After victims are stabilized inside the AMP, they are re-triaged (third triage) to determine the sequence of evacuation. During third triage, correct and complete documentation should be recorded for each patient. The third triage has four levels: red for immediate; yellow for delayed; green for minor; and black for dead. Victims are tagged according to their priority for transport: all victims that are tagged red should be transported first, followed by yellow and then green. If victims are being transported to different facilities, their order of departure from the field is of less importance. When one single hospital will receive the victims, then the order of priority should be strictly adhered to.

The AMP Manager must coordinate the methodical evacuation of victims. Priority must be given to critical but salvageable patients. All communications regarding transfers must be channeled through the field incident command post to the appropriate receiving facility. The designation of an Evacuation Officer and a Transport Officer greatly facilitates smooth evacuation. See Appendix 2 for the responsibilities of these positions.

An Evacuation Officer decides the type of vehicle needed for the transfer and the level of expertise an escort should have. He/she supervises the loading of the victims and reports directly to the AMP Manager.

When there are multiple impact zones and it is necessary to establish separate AMPs (primarily because of distance between the impact zones), an intermediate level for the coordination of evacuations will be required. If each AMP dispatches directly to the tertiary care center without such coordination, efficiency will be lost. To facilitate coordination, the multiple AMPs would dispatch to a center with greater stabilizing and evacuation facilities, which will coordinate the onward transfer. This may be a "field hospital" a polyclinic, a secondary hospital or other ad hoc structure.

Figure 10.1 Tags for Third Triage Following Stabilization in the AMP

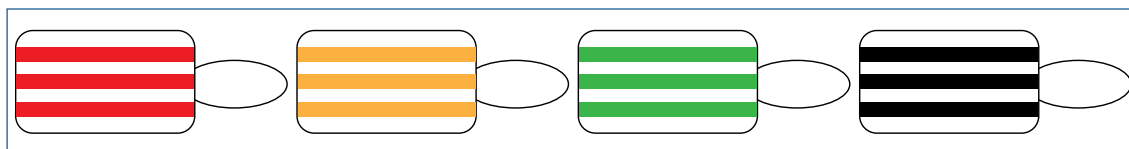
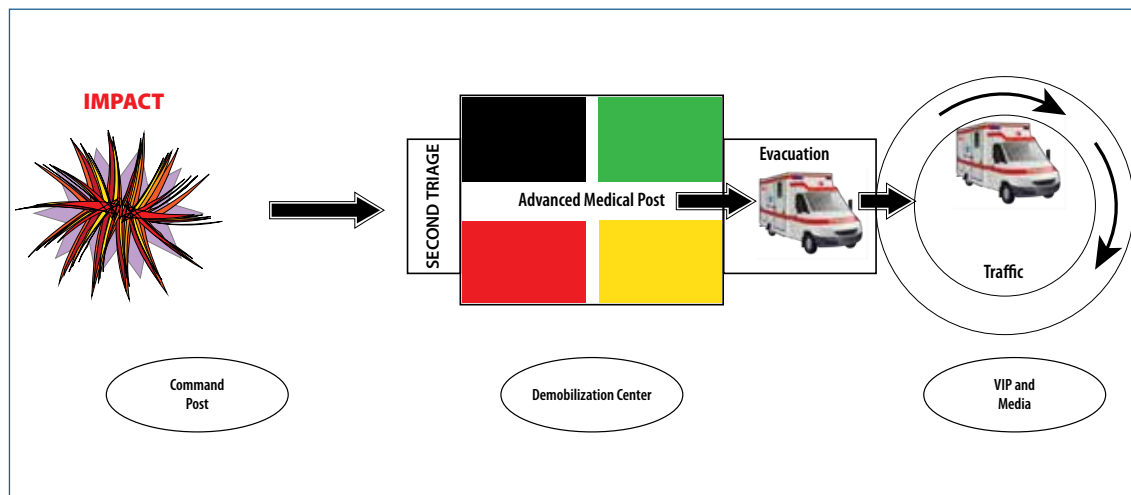


Figure 10.2 Schematic of Field Organization



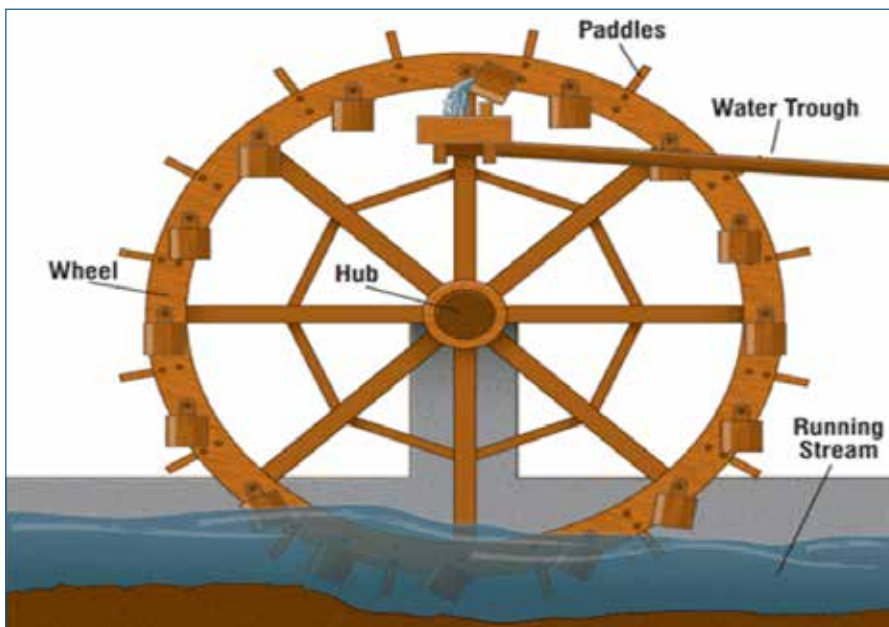
The movement of victims out of the AMP must be prioritized and smoothly coordinated.

Regulation of Evacuation

It is important and necessary to strictly control the rate and destination of evacuation to avoid overwhelming the health facilities. One of the roles of the first response team that arrives on the scene will be to stop any spontaneous evacuation organized by witnesses. Unmanaged transport in unsafe, uncontrolled conditions to an unprepared facility will endanger the lives of victims and disrupt the implementation of the Mass Casualty Management System – thus endangering the lives of those to follow.

The Transport Officer will physically coordinate all evacuation. He/she is usually a fire, police, or ambulance officer. Every attempt should be made to have vehicles traveling in a 'conveyor belt' configuration. This is referred to as the 'Noria,' a term was first used in 1916 during the World War 1 battle of Chemin et Dames in Verdun, France. (Noria comes from the Latin word for wheel).

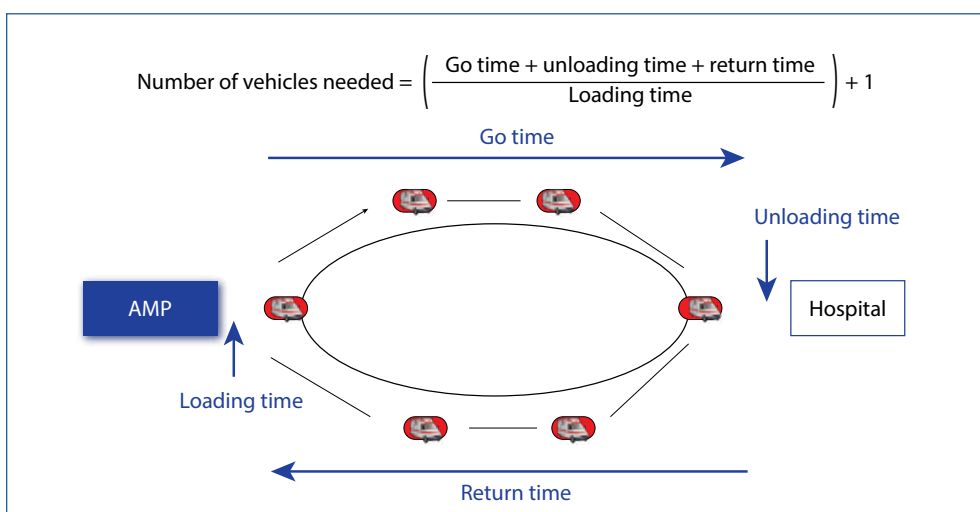
Figure 10.3 The Noria



A Noria water wheel (Norse mill, Persian wheel) is a hydropower system used for extracting power from a flow of water. Along with windmills, it was a widely used system in the Middle Ages to power most industries in Europe. Typically, it is a large wooden wheel with a number of blades or buckets arranged on the outside rim forming the driving surface.

It is commonly accepted that the average loading time for patients is five minutes; the same is true for unloading patients. If the travel time between the field site and the hospital is known, then it is possible to calculate the number of vehicles needed to maintain smooth loading and unloading process, without bottlenecks, using the Noria formula.

Figure 10.4 The Noria Formula



Rules

No victims may be removed from the AMP to health care facilities before:

- The victim is in most stable condition possible.
- The victim is adequately equipped for the transfer.
- The receiving facility is correctly informed and ready to receive the patient.
- The most appropriate vehicle and escort are available.

In addition:

- Ambulance drivers must remain in their vehicles on radio watch at all times. The ambulance driver is still required to assist with the loading and unloading of the patient.
- Ambulances must park only in designated areas and always be ready to move.
- Ambulances must do a radio check just prior to departure and radio in five minutes before arrival at the hospital.

Note: In cases where the designated ambulance driver is also an EMT/Paramedic, as the designated driver he/she will remain with the vehicle once the AMP has been established and movement of victims has commenced.

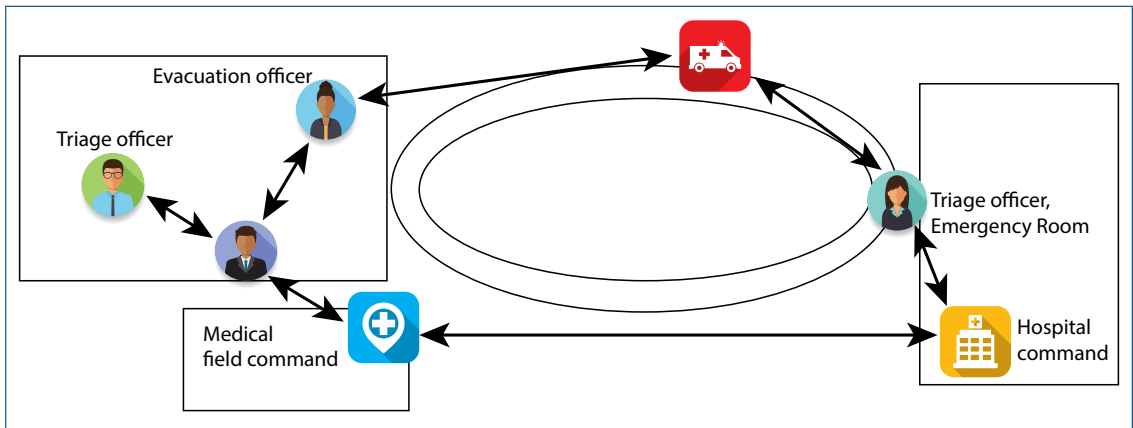
Evacuation of Non-acute Victims

Non-acute victims are usually evacuated at the end of field operations. However, the transfer of non-acute victims can be inserted into the general evacuation process when:

- Primary health care facilities are available and victims have been assessed.
- Non-medical transport resources are available (e.g., minibus, pick-up truck, etc.).

- It will not interfere with the transfer of acute victims (timing, manpower).
- Priority for evacuation is always given to critical or acute victims.

Fig 10.5 Communication Linkages between Field and Hospital



Notes

[illegible]

Review Questions

1. The dispatching of ambulances must be all of the following, **except**:
 - a. Rapid.
 - b. Adapted.
 - c. Well-organized.
 - d. Generalized.
2. The Evacuation Officer:
 - a. Reports to the AMP manager.
 - b. Is responsible for ambulance traffic.
 - c. Does the fourth triage.
 - d. Is only responsible for the evacuation of the rescuers.
3. Typically, the Third Triage:
 - a. Is done at the Accident and Emergency Department.
 - b. Is done inside the AMP after stabilization.
 - c. Is done at entrance to the AMP.
 - d. Does not help.
4. From a disaster site 10 miles away from the hospital, you, as the AMP Manager, must send a patient with multiple trauma by ambulance. Your most important step is to:
 - a. Inform the Hospital Command post.
 - b. Ask the driver to drive as fast as possible.
 - c. Ignore correct immobilization of the patient to allow quick transport.
 - d. Inform the receiving facility of the patient's status, departure time and ETA, following permission from the Incident Command Post.

Answer Key: 1 - d; 2 - a; 3 - b; 4 - d



Fourth Triage and Hospital Reception

Lesson Objectives

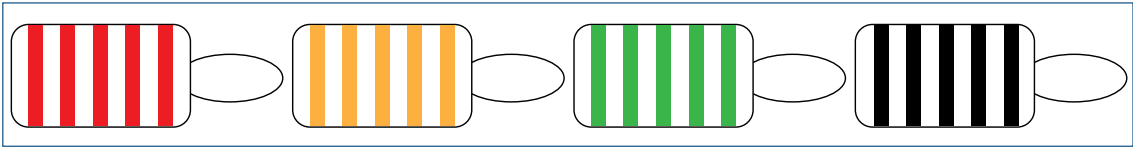
- List the contingency plans needed to prepare for the reception of victims in a hospital setting.
- Understand the concept of the four levels of Fourth Triage.
- Review the overview of Hospital Incident Command.

If the field management works well, the emergency department should never be over-stretched or flooded with victims. Discharging as many patients as possible and where appropriate should create additional bed space. Each ward’s pre-existing mass casualty plans will need to be activated, including recruiting additional staff and procuring supplies.

If patients arrive too rapidly from the field to be managed smoothly, a fourth triage point should be created at the entrance to the Emergency Department. However, if patients arrive having only received first triage (type of scoop and run), then second triage is done at the entrance to the Emergency Department. The Emergency Department will, in effect, function as an AMP. Patients will be sent to specific areas of the Emergency Department, hospital or clinic to be managed. The available space is divided to the Green Area, Yellow Area and Red Area, using ‘fixed-space’ divisions (see Figure 8.5, Description of Treatment Areas). The hospital morgue will serve as the Black Area; the Red Area will be the resuscitation area, or the entire ER, depending on the number of victims; the Yellow and Green areas may be in, near or nearby the Emergency Department, depending on the size and nature of the incident.

Victims requiring the operating theatre will need an average time of two hours, so this knowledge can assist in managing patient flow and allocating personnel. No victim should be transferred to a health facility before that facility is informed of the pending transfer. The hospital ED should also be told by radio when the ambulance is five minutes away. This allows for appropriate reception, while allowing other work to continue.

Figure 11.1 Fourth Triage Tags



Fourth triage uses four colours, with parallel lines along the shorter axis of the card, as shown in Figure 11.1. They are applied at the triage area at the hospital, if necessary (many victims). This prioritizes patients for re-stabilization and interventions (e.g., surgery).

All receiving facilities, wards, and areas must have pre-established plans for preparing to receive victims. These plans should be activated as soon as the facility goes on alert.

Table 11.1 Estimated timescale for patient management (from admission to discharge)

ADMISSION CARE	IMMEDIATE CARE	HOSPITALIZATION	OUTPATIENT
<i>TRIAGE</i>	<i>XRAY LABORATORY SURGERY ICU</i>	<i>FOLLOW UP CARE</i>	<i>REHABILITATION</i>
2 MINUTES	2 HOURS	2 WEEKS	2 MONTHS

Figure 11.2 Victim Flow in the Hospital

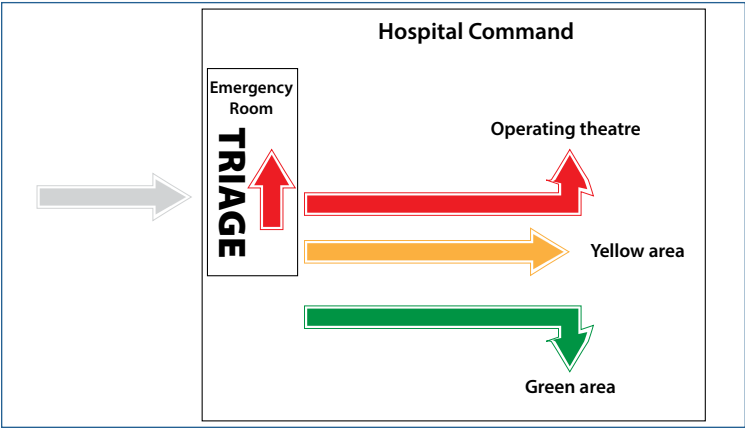


Table 11.2 Areas to be Activated at Hospital

Hospital Incident Command Post	
<ul style="list-style-type: none">• Mobilizes almost immediately, with highest ranking administrator in charge.• Includes representatives of various areas of the facility.• Determines capabilities.• Coordinates and controls activities between and among areas.• Maintains communications with AED, Field, Security and OT.	
<div><p>Emergency Room</p><ul style="list-style-type: none">• Mobilization of staff• Collection of supplies• Creation of examination space• Formulation of an Advanced Medical Team• Coordinates activities with the Hospital Incident Command Post<p>Operating Theatres and Surgical Team</p><ul style="list-style-type: none">• Cessation of elective surgery• Preparation of theatres for emergencies• Allocation of staff to theatres• Coordination activities with the Hospital Incident Command Post<p>Intensive Care Units and Surgical Ward</p><ul style="list-style-type: none">• Discharge/relocates stable patients• Prepares wards for emergencies• Mobilizes staff (medical and nursing) from other areas• Maintains communications with Hospital Incident Command Post<p>Security</p><ul style="list-style-type: none">• Secures all areas• Controls crowd in and around AED• Controls traffic in and out of hospital• Coordinates activities with the police• Communicates with Hospital Incident Command Post</div>	<div><p>Human Resources</p><ul style="list-style-type: none">• Administration• Medical staff• Nursing staff• Security• Pharmacy• Supplies• Social services• Engineering• Kitchen• Housekeeping• Others<p>Other Areas to be Activated</p><ul style="list-style-type: none">• Provision for Relatives: counseling, contact tracing• Temporary mortuary for the victims• Rest area for the staff• Press room• Others</div>

Notes

[illegible]

Review Questions

1. Who is best suited to be in charge of the fourth triage at the hospital?
 - a. An experienced surgeon or ER physician.
 - b. The night supervisor or head nurse.
 - c. The Hospital Director/Chief of Staff.
 - d. An experienced internist.
2. Your main hospital with two operating rooms and two surgeons received eight multiple trauma victims at 0700 hours. At what average time should the last victim be in his bed, having received the basic treatment process (stabilization, X-rays, surgery, etc)?
 - a. 1000 hours.
 - b. 1200 hours.
 - c. 1500 hours.
 - d. 1700 hours.

Answer Key: 1 - a; 2 - c



Terrorism: The Nuts and Bolts

Lesson Objectives

- Understand the general principles governing nuclear, biological and chemical agents.
- Recognize the presentation and initial emergency management of exposure to toxic agents.
- Understand the concept of dirty bombs.
- Understand the initial emergency management of nuclear exposure.
- Explain the risks posed by biological agents.
- Explain the risks posed by radiological agents.
- Describe the role of first responders in a terrorist event.

Introduction

Terrorism is an act on unsuspecting persons intending to cause harm, gain media attention and inflict fear in members of the community to draw attention to a political or religious ideology. The weapon(s) used in a terrorism incident could be anything conceived by the mind of the terrorist. On September 11th 2001, passenger planes were hijacked and used as 'bombs' on the financial pillars of New York City—the World Trade Center Towers. There is that overwhelming drive to be novel, creative, and covert in their attacks to get that element of surprise.

There are many definitions of terrorism. The League of Nations³ defined terrorism as: "All criminal acts against a state and intended or calculated to create a state of terror in the minds of a particular person or a group of persons or the general public."

There are many agents designed to bring about mass death, casualties, and damage to property or infrastructure. Chemical, biological, radiological, nuclear and explosives are all technological methods used. The preferred method has been explosives, chemicals, and more recently, the use of vehicles.

The technological advances of the last century have given mankind the ability to influence nature in a way that is far beyond the expectations of our forefathers. With that technology, man has been able to alter features of bacteria and viruses to create super bugs with the capability of infecting humans and animals by inhalation and other 'unnatural' means. This can give rise to a form of terrorism called biological terrorism. These diseases then present a diagnosing challenge as well as a treatment stalemate that may well be insurmountable in unprepared communities.

This is the basis of germ warfare and in the hands of terrorists, doomsday cults, and insurgents, this can create deep distress and overwhelming disease on communities. The anthrax incidents in the USA in 2002 were but the tip of the iceberg of possibilities.

Unstable political climates and religious unrest have increased the chances of these occurrences. Medical communities must be ever vigilant, as the impact of germ warfare can unknowingly cross households, workplaces, neighbourhoods, national boundaries, and oceans while they are still in the incubation phase and infect or affect unsuspecting individuals and/or communities many miles away. The world is but a village.

According to Eric K. Noji, M.D., M.P.H., biological terrorism is "the use or threatened use of biological or biologically related toxins against civilians, with the objective of causing illness, death or fear."⁴

Examples of Past Biological Attacks

- Sieges in the Middle Ages
- Smallpox blankets given to Native Americans
- Germany in WWI
- Japan in WWII
- 1984 Salmonella poisoning in a salad bar in Oregon
- 1995 Iraq used anthrax and botulism toxin weapons on other Iraqis
- 1995 Aum Shinrikyo tried anthrax in Japan, but failed
- 1997 to 1999 multiple anthrax hoaxes in U.S.A.

3. Article 1.1 of the League of Nations' 1937 Convention for the Prevention and Punishment of Terrorism.

4. Noji, Eric. (2001). Bioterrorism: Challenges for Public Health Action. Prehospital and Disaster Medicine. Available online at <https://bit.ly/2wFSocG>

Biological Agents

Some biological agents are well known and the U.S. Centers for Disease Control and Prevention (CDC) has listed those of concern on its website (www.cdc.gov). These include the agents that cause the following: anthrax, botulism, plague, small pox, viral haemorrhagic fevers, and tularemia. These attacks will likely be **covert** attacks, where unsuspecting passersby are infected.

Anthrax

Caused by a gram-positive bacillus. In its native form it can cause the cutaneous (skin) form of the disease or the gastrointestinal form, both with an incubation period of 1-7 days. Both respond extremely well to appropriate antibiotics, but if untreated can have a 20-50 % mortality rate. Anthrax can be weaponized to cause inhalational anthrax, with an incubation period of 2-60 days and a 90% mortality rate **with** treatment. Immunization is available.



Botulism

Caused by the toxin from a gram-positive bacillus, in its native form it is transmitted by contaminated food and has an incubation period of 12-36 hours after ingestion. It causes a characteristic flaccid paralysis in a fully alert, responsive patient with symmetrical cranial neuropathies and a descending weakness with no sensory deficit. It progresses to respiratory dysfunction with paralysis of the diaphragm muscles. It has been weaponized in inhalational form, with an incubation period of 24-72 hours. It is not transmissible from person to person and immunization is not necessary.

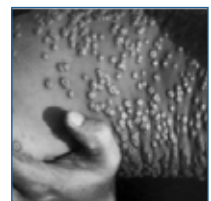
Plague

Caused by a gram-negative bacillus, in its native form it is transmitted by the bite of an infected flea, which leads to the bubonic plague. It has an incubation period of 2-8 days. The infected bite leads to a bubo, then spreads to cause an aggressive pneumonia and sepsis with gangrene of tips (digits). The weaponized form is inhalational, with an incubation period of 1-3 days. It is contagious up to 48-72 hours after antibiotics are administered. There is no vaccine.



Smallpox

Caused by a virus, in its native form it is spread by airborne transmission with an incubation period of 7-17 days. It largely causes a severe skin rash, but can kill those with compromised immune systems. The rash is synchronous and most dense on face and limbs (unlike chicken pox). It was eradicated worldwide in 1980, after which all routine immunizations ceased. Smallpox is highly contagious. It has been weaponized. Vaccines are available but in limited quantities. You can find more information on bioterrorism agents at the CDC website: www.bt.cdc.gov.



Chemical Agents

These can be used against opponents/enemies, but these attacks are likely to be overt since the symptoms they cause will be evident within seconds to minutes. These fall into the following broad categories: blister

agents (mustard gas, phosgene, oxime); nerve agents (sarin, ricin, tabun GX, VF); pulmonary agents (phosgene, chlorine); and pesticides (organophosphates). Responders to chemical incidents must be appropriately clad with impervious suits and ultra fine filtering air masks or self-contained breathing apparatus to avoid becoming secondary victims.



Chemicals that are inhaled or absorbed through the skin will produce the following signs and symptoms: sludge, salivation, sweating, lacrimation, urination, diarrhea, gastric upset, and emesis.

The keys to planning include:

- Establishing chain of command and knowing lines of communication.
- Education of Emergency Department staff.
- Education of healthcare workers.
- Use of the local news media to reliably inform population.

Indicators of Chemical Weapon Use

- Unusual dead or dying animals.
- Unexplained casualties.
- Unusual liquid, spray or vapour.
- Suspicious devices/packages.

Indicators of Possible Biological Weapon Use

- Unusual number of dead or dying animals.
- Unusual number of casualties.
- Unusual liquid, spray or vapour; unusual swarms of insects

Notification Essentials

- Observed indicators.
- Wind direction and weather conditions.
- Plume direction.
- Orientation of victims.
- Number of apparent victims.
- Type of injuries.
- Witness statements or observations.
- Nature of chemical or biological weapon, if known.
- Exact location of reporting unit.
- Suggested safe access route and staging area.

Incident Objectives

- Secure perimeter and designate zones of operation.
- Use appropriate protective gear.

- Control and identify agent release.
- Rescue, decontaminate, triage, treat and transport.
- Move uninvolved crowds/persons to safe zones.
- Stabilize the incident.
- Avoid secondary contamination.
- Secure evidence and crime scene.
- Protect against secondary attack.

Responders need to remember safety first and follow the following steps **in order of priority**:

1. Identify the threats.
2. Communicate to support agencies.
3. Secure and neutralize the area.
4. Decontaminate victims.
5. Triage the victims.
6. Treat victims.
7. Hospital receives victims.
8. Disposition of victims' bodies.

Notes

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal blue lines across its entire width. The paper is otherwise completely empty, with no margins, text, or other markings.

Review Questions

1. An attack on a community using biological weapons:
 - a. Is likely to be covert.
 - b. Is likely to be overt.
 - c. Cannot ever happen.
 - d. Can only be done using a dirty bomb.
2. Overt attacks include which of the following, **except**:
 - a. Dirty bombs.
 - b. Chemical weapons.
 - c. Biological weapons.
 - d. Explosions.
3. According to the CDC, all of the following diseases are known to have been weaponized, **except**:
 - a. Anthrax.
 - b. Whooping cough.
 - c. Botulism.
 - d. Plague.
4. Which of the following is true about smallpox?
 - a. Has 90% death rate.
 - b. Rash resembles chickenpox but is synchronous.
 - c. Affects only children.
 - d. Is spread by food.

Answer Key: 1 - a; 2 - c; 3 - b; 4 - b



Hurricanes



Lesson Objectives

- Review different types of hydrometeorological events.
- Identify the characteristics of the different categories of hurricanes.
- Review common facts about hurricanes and hurricane preparedness.

General Information

Hurricane season in the Atlantic basin is **June 1st - November 30th** annually. During the hurricane season, there is a possibility of weather systems passing over or near the islands, causing potential torrential rainfall accompanied by furiously strong winds and resulting tidal surges that erode the coastline. The resulting damage to the infrastructure of affected communities is potentially quite devastating. These systems can be categorized based on the strength of their maximum **sustained** winds.

Hurricane season's busiest time is in August and September. However, storms have occurred as early as March and as late as December. In the Eastern Pacific Ocean, the season begins May 15th to November 30th, with more frequent systems.

Tropical Wave

This is an area of disturbed weather in the tropics, accompanied by thunderstorms.

Tropical Depression

This is the mildest organized weather system, with sustained winds of 38 mph or less. Tropical Depressions are given a number.

Tropical Storm

Storms are organized weather systems with strong thunderstorms, well defined circulation, and maximum sustained winds of 39-73 mph (62-117 km/hr). Each season, these storms, which form from tropical depressions, are assigned names in alphabetical order from a pre-determined list of names.

Hurricane (Tropical Cyclone)

Hurricanes are one of nature's most devastating weather phenomena. These are weather systems with sustained winds of 74 mph (119 km/hr) or greater. Hurricanes are commonly further sub-divided using the Saffir-Simpson Hurricane Intensity Scale.

Table 13.1 Wind Speed Comparison and Conversion Tables

Description	Knots	MPH	KPM
Small Craft Warning	20 - 33	28 - 38	37 - 61
Gale Warning	34 - 47	39 - 54	62 - 86
Storm	48 or more	55 or more	87 or more
Tropical Depression	33 or less	38 or less	61 or less
Tropical Storm	34 - 63	39 - 72	62 - 116

Table 13.2 Categories of Hurricanes

Category of Hurricanes	Maximum Sustained Wind Speeds			Environmental Damage Likely
	Knots	MPH	KPM	
Category 1 Hurricane	64 - 82	74-95	119-153	Minimal
Category 2 Hurricane	83 - 95	96 -110	154 - 177	Moderate
Category 3 Hurricane	96 - 112	111 -129	178 -208	Extensive
Category 4 Hurricane	113 - 136	130- 156	209 -251	Extreme
Category 5 Hurricane	>137	>157	>252	Catastrophic

Table 13.3 Likely Height of Storm Surge

Hurricane	Likely Height of Storm Surge	
	Feet	Metres
Category 1	4 -5	1.25 – 1.50
Category 2	6- 8	1.75 – 2.50
Category 3	9-12	2.75 – 3.75
Category 4	13 -18	4.00 – 5.49
Category 5	>18 ft	>5.50

Tornadoes

Tornadoes are known to occur in about 25 percent of the hurricanes that make landfall. They can cause a considerable amount of damage. Some scientists also suspect that the thunderstorms that occur near the eye of a hurricane can produce very strong downbursts (vertical downward movements of air).

Winter Storms and Gales

Unlike most Caribbean countries, Bermuda may be suddenly threatened by hazardous winter winds between December 1st and May 31st annually. Wind warning categories typical of the winter season in Bermuda include:

- **Small-craft:** Sustained winds of **23-39 mph** (20-34 knots)
- **Gale:** Sustained winds of **39-58 mph** (34-47 knots)
- **Storm:** Sustained winds of **59 mph** or greater (>48 knots)

Severe Thunderstorms

These may occur at any time. During the summer months, they are usually associated with a tropical storm or

hurricane that may threaten Caribbean islands and the USA. Severe thunderstorms may be defined as one or more of the following:

- Wind gusts greater than **50 knots**.
- Hail greater than **¾ inch**.
- Tornado or tornado waterspouts (not to be confused with funnel clouds or waterspouts, which are not considered as severe weather).

Watches and Warnings

The Meteorological Service, the weather forecasting authority for countries, issues public alerts of weather: **Watches and Warnings**. Residents must make use of the opportunity to complete *last minute* preparations appropriately in the hours preceding a weather system when these alerts are posted. General preparations should be made well in advance of any system and just fine-tuned when the alerts are issued.

Watches

- A **watch** indicates that weather conditions are favorable for a hazard to occur. It literally means be on guard.
- **Tropical storm watch**: an announcement that tropical storm conditions (sustained winds of 39 to 73 mph) is possible within the specified costal area within 48 hours.
- **Hurricane watch**: an announcement that hurricane conditions (sustained winds of 74 mph or higher) are possible within the specified costal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical-force winds.

Warnings

- A warning requires immediate action. This means a weather hazard is imminent; it is either occurring (a tornado has been spotted, for example) or is about to occur at any moment.
- Gale warning: indicates that the onset of gale force winds is anticipated within 24 hours.
- Tropical storm warning: an announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are expected somewhere within the specified coastal area within 36 hours.
- Hurricane warning: an announcement that hurricane conditions (sustained winds of 74 mph or higher) are expected somewhere within the specified costal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane warning is issued 36 hours in advance of the anticipated onset of tropical-storm force winds.

Each country has a National Disaster Office or Department of Emergency Management, which is a centralized organization set up to disseminate information to the public and to coordinate the efforts of Government departments, utility services and private agencies, with the goal of protecting and preserving the life of the community before, during and after storms, hurricanes and other disasters. These departments usually fall under the relevant Government Ministry and its Director. The Commissioner of Police and Chief of Staff of the Army/ Defence Force convenes meetings as necessary, at the Emergency Operations Centre.

Hurricane Related Deaths and Injuries

During the hurricane itself, there is usually a lull in patients seeking medical attention, since there is limited available transport to get to the hospital. Emergency vehicles and their operators are at the mercy of the elements when attempting to respond to calls and progress is usually very slow and arduous.

After the hurricane, the Emergency Department will see an increase in clients concomitant with the clearing of roads. This wave of patients, over a period that fluctuates between 12 hours after the hurricane has passed to one week later, will largely consist of minor injuries.

Worldwide, deaths from hurricane have decreased due to better forecasting and preparedness efforts. Deaths that do occur are most frequently the result of drowning from coastline tidal surge, overwhelming waves, or fresh water flooding inland. Other deaths result from suffocating mudslides and crush injuries from landslides, falling trees, and collapsed walls, roofs or buildings.

Other post-hurricane medical problems may include:

- Asthmatic attacks
- Stress related conditions, including heart attacks
- Uncontrolled diabetes
- Psychiatric derangement
- Deterioration of patients with home oxygen or ventilator dependence
- Back pain, sprains and strains
- Wound infection
- Chronic Fatigue Syndrome
- Food poisoning
- Insect bites

Useful Hurricane Trivia – Knowledge Is Power

Did you know that?

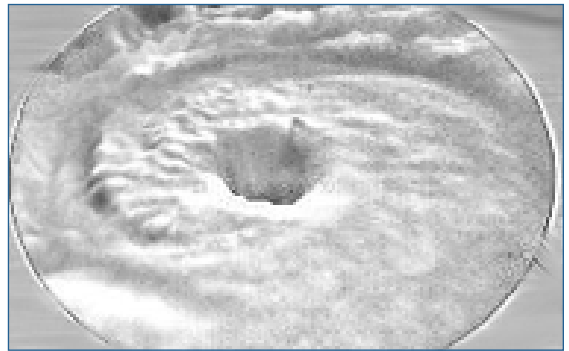
- Peak hurricane time in the Atlantic is early autumn, i.e., August and September.
- Hurricanes occur about three times more often in the Pacific than in the Atlantic.
- The average hurricane is 2,000 times wider than a tornado: - 300 miles (480 km.).
- A hurricane's high winds can whip up waves as high as 66 feet (20 m), giving rise to high surf and dangerous storm surges along the coastline.
- A storm surge is a wall of water pushed ahead of an approaching storm/hurricane.
- These numbers can be greatly increased if high tide coincides with the approach.
- Well-organized hurricanes have a central eye, which varies in size. In the eye of a hurricane, skies are clear, temperatures are high and atmospheric pressure is low, and is very calm.
- Going outdoors during the eye of the storm is very dangerous, as you can be caught by even stronger winds that suddenly come from the opposite direction.

- The word Hurricane means big wind. Hurricane is just another name for tropical cyclones. In the Pacific, they are called typhoons; in the Bay of Bengal (Indian Ocean), they are called cyclones; and in Australia they are called Willy-willies.
- Hurricanes typically develop over warm ocean waters within 1,000 miles (1,600 km) of the equator, but never over the equator itself! This zone is called 'Hurricane Alley.'

Hurricane Alley (orange)



Eye of the Storm



While all hurricanes are potentially deadly, the degree of damage they are capable of inflicting can be measured by the height of the storm surge generated (major cause of damage and deaths) and the strength of the winds. The following summarizes the expected levels of damages level commonly associated with different strengths of storms.

Category 1 Hurricanes

- Damage primarily to unanchored mobile homes, shrubbery, and trees.
- Some damage to poorly constructed signs.
- Some coastal road flooding and minor pier damage.
- No real damage to building structures.

Category 2 Hurricanes

- Damage to roofing material, doors and windows.
- Considerable damage to shrubbery and trees with some trees blown down.
- Considerable damage to mobile homes, poorly constructed signs, and piers.
- Coastal and low-lying escape routes flood 2-4 hours before arrival of the hurricane center.
- Small craft in unprotected anchorages break moorings.

Category 3 Hurricanes

- Some structural damage to small residences and utility buildings with a minor amount of curtain wall failures.

- Damage to shrubbery and trees with foliage blown off trees and large trees blown down.
- Mobile homes and poorly constructed signs are destroyed.
- Low-lying escape routes are cut off by rising water 3-5 hours before arrival of the center of the hurricane.
- Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris.

Category 4 Hurricanes

- More extensive wall failures with some complete roof structure failures on small residences.
- Shrubs, trees, and all signs are blown down.
- Complete destruction of mobile homes.
- Extensive damage to doors and windows.
- Low-lying escape routes are cut off by rising water 3-5 hours before arrival of the center of the hurricane.
- Major damage to lower floors of structures near the shore.

Category 5 Hurricanes

- Complete roof failure on many residences and industrial buildings.
- Some complete building failures with small utility buildings blown over or away.
- All shrubs, trees, and signs blown down.
- Complete destruction of mobile homes.
- Severe and extensive window and door damage.
- Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane.
- Major damage to lower floors of all structures located less than 15 ft above sea level and within 500 yards of the shoreline.

The following pointers can help you prepare yourself and your family for the passage of a storm.



- Monitor the approach, path and strength of an approaching storm.
- Have a household and work plan.
- Plan how to function if you have extended periods of no food, running water, electricity, telephone or shelter.
- Plan how to claim insurance.
- Have a full tank of gas (car/bike).
- Have some cash on hand.
- Have a means of heating water/food.
- Have disposables (such as eating utensils).
- Have car charger for cell phone and non-electric house phone.
- Have proof of identity (passport, photo ID).
- Have photographic inventory.
- Have essential medications.
- Think of pet care.
- Ensure your tetanus toxoid status is up to date.
- Use window shutters or board up your windows.
- Consider tank water management.
- Think of clean-up supplies.
- Look out for the elderly in your neighbourhood.
- Keep your cool around kids.
- Learn from the mistakes of others!



- Ignore warnings. False alarms are better than no warning at all!
- Bother taping glass panes.
- Park under trees and walls.
- Stay near unshuttered glass windows during the storm.
- Be afraid to discard frozen food after the storm.
- Delay evacuation.

Notes

This image shows a single page of white paper with horizontal blue lines, resembling notebook paper. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Review Questions

1. In the aftermath of a hurricane
 - a. Relocating victims to shelters is a priority.
 - b. Dead bodies, left unburied, create a high risk of starting epidemics.
 - c. Mass immunization provides a false sense of security.
 - d. None of the above.
2. At what wind speed (mph) does a tropical storm become a hurricane?
 - a. 39.
 - b. 50.
 - c. 74.
 - d. 100.
3. Where is a tropical storm or hurricane the strongest?
 - a. Front left.
 - b. Front right.
 - c. Back left.
 - d. Back right.

Answer Key: 1 - c; 2 - c; 3 - b



Psychological First Aid

Lesson Objectives

- Understand the concept of stress.
- Define Psychological First Aid (PFA).
- List ten (10) organizational stressors.
- Recognize incidents that are likely to produce harmful stressors.
- Recognize the physical manifestations of stress.
- Identify methods that can be used to effectively manage stress reactions.
- List survival skills techniques for stress management.
- Understanding the concept of a rest/refreshment area.

Introduction⁵

Rescuers may experience traumatic events or a critical incident (any incident that causes emergency service personnel to experience unusually strong emotional reactions) that have the potential to interfere with their ability to function, either at the scene or later. Even though the event may be over, the rescuer may, then or later, experience strong emotional or physical reactions. It is common, in fact quite normal, for people to experience emotional aftershocks (or stress reactions) when they have passed through a horrible event.

Sometimes the emotional aftershocks appear immediately after the traumatic event. Sometimes they may appear a few hours or a few days later. In some cases, weeks or months may pass before stress reactions appear.

The signs and symptoms of a stress reaction may last a few days, a few weeks, a few months or occasionally longer, depending on the severity of the traumatic event. With understanding and the support of loved ones, the stress reactions usually pass more quickly. Occasionally, the traumatic event is so painful that professional assistance from a counselor may be necessary. This does not imply craziness or weakness. It simply indicates that the particular event was just too powerful to manage by themselves.

Psychological First Aid (PFA) is based on the principles of crisis intervention and seeks to address the disruptive and/or destructive psychological reactions of rescue workers that may occur as a result of exposure to disasters so as to maintain efficient functioning within their respective organizations.

PFA is not intended to take the place of professional therapy. It provides emergency response personnel with the information they need to better understand and manage their own feelings and emotional responses to disasters in which they may have been directly or indirectly involved. Knowing what to expect in a crisis, understanding the normal response to the crisis, and understanding the steps to recovery decreases the down time, increases the probability of a positive recovery, and increases the strength and efficiency of the organization.

Crisis Events - Large-scale and Individual

- Both types of events occur in every community in the world.
- Large-scale events include natural disasters, war and terrorist attacks, disease outbreaks, major displacement of people and communities.
- Individual events affect one or a few people, such as accidents, robbery, assault.
- Both types of events have physical, social, and emotional consequences for those affected.

Understanding Stress Reactions

How much stress is expected following a traumatic event?

The more extensive the impact of the event on our lives, the greater the response at the time and in the future, especially in terms of both threats to basic needs and the intensity of the experience. Even for those who were not an eyewitness or were not actively involved, psychological trauma may be felt.

5. The content of this Unit on Psychosocial First Aid has been adapted from a publication of the World Health Organization titled Psychological First Aid: Guide for Field Workers, available online at http://www.who.int/mental_health/emergencies/en.

What are the normal reactions to highly stressful events?

The general and normal response to trauma is:

- Alarm** – It is characterized by disbelief, efforts to make sense, shock and stunned confusion. Our usual abilities to cope are overwhelmed. There are heightened levels of suggestibility, fear and inadequacy. Secondary responses that interfere with thinking, emotions, performance and physical integrity may continue.
- Resistance** – This involves coming to terms with the event and experiencing less intrusive responses and more personal control. Then coping is effective; normalcy begins to return although the memory may persist.
- Exhaustion** – This occurs when coping or management of the experience is ineffective. Medical and therapeutic interventions are required to manage a person who becomes traumatically exhausted.

Mild to moderate stress reactions in the emergency and early post-impact phases of disaster are highly prevalent because survivors (and their families, community members and rescue workers) accurately recognize the grave danger in disaster. Although stress reactions may seem “extreme” and cause distress, they generally do not become chronic problems. Most people recover fully from even more moderate stress reactions within 6 to 16 months,

In fact, resilience is probably the most common observation after all disasters. In addition, the effects of traumatic events are not always bad. Disaster may bring a community closer together or re-orient an individual to new priorities, goals and values. This concept has been referred to as “post- traumatic growth” by some authors. There are a number of possible reactions to a traumatic situation that are considered within the “norm” for individuals experiencing traumatic stress.

Victims of traumatic stressors usually employ psychological defenses to protect themselves from further stimulation. The resultant barrier can unfortunately also stop such persons from making use of assistance being offered to them. With time this barrier becomes less and less permeable. For this reason post-trauma intervention must be prompt if the individual is going to derive maximum benefit.

The following are examples of common signs and signals of a stress reaction:

Thinking Distress Signals	Physical Distress Signals
Confused thinking Difficulty making decisions or solving problems Disorientation Nightmares Suspiciousness Intruding images Blaming someone Poor attention span Difficulty identifying objects/people Heightened or reduced alertness Heightened or reduced awareness of problems or Job risks	Excessive sweating Dizzy spells Rapid heart rate Rapid breathing rate Difficulty breathing Chest pain, discomfort Muscle tremors Grinding teeth Difficulty seeing Headaches

Emotional Distress Signals	Behavioural Distress Signals
Fear, and avoidance of similar situations Panic, anxiety Guilt, denial, Agitation, irritability Depression, detached Intense anger Apprehension Hopelessness, helplessness Emotional outbursts Feeling overwhelmed, out of control Displaying inappropriate emotions Questioning one's religious beliefs	Becoming withdrawn Sleep disturbances Antisocial actions Inability to rest, erratic, intensified actions Changes in speech patterns Loss of or intense increase in appetite Being hyper-alert Increase in alcohol, drug or other additive substances Changes in aggressiveness Absentmindedness and accident prone

Debriefings must be held when the participants are emotionally ready to accept and benefit from them. This often occurs within 24 to 72 hours after exposure to the traumatic incident.

Community intervention groups, usually volunteers, can form psychosocial support teams to provide peer-oriented crisis intervention programmes. They depend on guidance and assistance from mental health professionals and emphasize prevention over treatment.

The goals of these teams are to:

- Enhance the overall psychological health of the emergency response worker.
- Reduce the impact of traumatic stress on emergency response personnel and disaster workers.
- Accelerate recovery from exposure to stressful events.

Post-incident psychosocial support measures include:

- One-to-one crisis intervention
- Peer support
- Reassignment
- Professional personnel support
- Spouse/significant other support
- Informal group discussions
- Recreational activities
- Stress management educational programme
- Demobilizations
- Defusing
- Debriefings
- Follow-up services
- Referral options

Psychological First Aid

Psychological First Aid is critical, first-line psychosocial support for people affected by crisis events.

- PFA, like medical first aid, is not sufficient on its own.

- Immediately after a crisis event, those who assist are often family members, neighbors, teachers, community members and first responders of various kinds (emergency medical teams, police, fire-fighters).
- The term PFA was first coined in the 1940s, but its use has increased in modern-day crisis events.

What is Psychological First Aid?

PFA is humane, supportive and practical assistance to fellow human beings who have recently suffered a serious stressor:

- Non-intrusive, practical care and support.
- Assessing needs and concerns.
- Helping people to address basic needs (food, water).
- Listening, but not pressuring people to talk.
- Comforting people and helping them to feel calm.
- Helping people connect to information, services and social supports.
- Protecting people from further harm.

What Psychological First Aid is Not

- **Not** something only professionals can do.
- **Not** professional counseling.
- **Not** a clinical or psychiatric intervention (although can be part of good clinical care).
- **Not** "psychological debriefing."
- **Not** asking people to analyze what happened or put time and events in order.
- **Not** pressuring people to tell you their story, or asking details about how they feel or what happened.

Why Use Psychological First Aid?

People do better over the long term if they feel safe, connected to others, calm, and hopeful.

- Have access to social, physical, and emotional support.
- Regain a sense of control by being able to help themselves.

Psychological First Aid: Who, When, Where?

- Who can benefit from PFA?
 - Boys, girls, women and men who have recently experienced a crisis event and are distressed.
 - Some people need more than PFA alone, such as people with life-threatening injuries or those unable to care for themselves or their children.

- When should PFA be provided?
 - When encountering a person in distress, usually immediately following a crisis event.
- Where should PFA be provided?
 - Anywhere that is safe for the helper and affected person, ideally with some privacy as appropriate to the situation.

How to Help Responsibly

Adapt what you do to take account of the person's culture. Respect safety, dignity and rights.

- Safety: don't expose people to further harm. Ensure (as best you can) they are safe and protected from further physical or psychological harm.
- Dignity: treat people with respect and according to their cultural and social norms.
- Rights: act only in people's best interest, ensure access to impartial assistance without discrimination, assist people to claim their rights and access available support.
- Be aware of other emergency response measures.
- Care for caregivers: practice self-care and team-care.

Prepare	<ul style="list-style-type: none">• Learn about the crisis event.• Learn about available services and support.• Learn about safety and security concerns.
Look	<ul style="list-style-type: none">• Observe for safety.• Observe for people with obvious urgent basic needs.• Observe for people with serious distress reactions.
Listen	<ul style="list-style-type: none">• Make contact with people who may need support.• Ask about people's needs and concerns.• Listen to people and help them feel calm.
Link	<ul style="list-style-type: none">• Help people address basic needs and access services.• Help people cope with problems.• Give information.• Connect people with loved ones and social support.



- Be honest and trustworthy.
- Respect a person's right to make their own decisions.
- Be aware of and set aside your own biases and prejudices.
- Make it clear to people that even if they refuse help now, they can still access help in the future.
- Respect privacy and keep the person's story confidential, as appropriate.
- Behave appropriately according to the person's culture, age and gender.



- Don't exploit your relationship as a helper.
- Don't ask the person for any money or favor for helping them.
- Don't make false promises or give false information.
- Don't exaggerate your skills.
- Don't force help on people, and don't be intrusive or pushy.
- Don't pressure people to tell you their story.
- Don't share the person's story with others.
- Don't judge the person for their actions or feelings.

Good Communication: Things to Say and Do



- Try to find a quiet place to talk and minimize outside distractions.
- Stay near the person but keep an appropriate distance depending on their age, gender and culture.
- Let them know you hear what they are saying, for example, nod your head and stay attentive
- Be patient and calm.
- Provide factual information IF you have it. Be honest about what you know and what you don't know. *"I don't know, but I will try to find out about that for you."*
- Give information in a way the person can understand - keep it simple.
- Acknowledge how they are feeling, and any losses or important events they share with you, such as loss of home or death of a loved one. *"I'm so sorry..."*
- Respect privacy. Keep the person's story confidential, especially when they disclose very private events.
- Acknowledge the person's strengths and how they have helped themselves.



- Don't pressure someone to tell their story.
- Don't interrupt or rush someone's story.
- Don't give your opinions of the person's situation, just listen.
- Don't touch the person if you're not sure it is appropriate to do so.
- Don't judge what they have or haven't done, or how they are feeling. Don't say... *"You shouldn't feel that way."* or *"You should feel lucky you survived."*
- Don't make up things you don't know.
- Don't use too technical terms.
- Don't tell them someone else's story.
- Don't talk about your own troubles.
- Don't give false promises or false reassurances.
- Don't feel you have to try to solve all the person's problems for them.
- Don't take away the person's strength and sense of being able to care for themselves.

People Who Likely Need Special Attention (safety, to access services)

- Children and adolescents, especially those separated from caregivers.
- People with health conditions and disabilities.
- People who are non-mobile, or who have chronic illness, hearing/visual impairments (deaf or blind), or severe mental disorders.
- Frail elderly people, pregnant or nursing women.
- People at risk of discrimination or violence.
- Women, people of certain ethnic or religious groups, people with mental disabilities.

Practice Self-care and Team-care

- Before:
 - Are you ready to help?
 - Are you connected with a group or organization for safety and coordination?
- During:
 - How can you stay physically and emotionally healthy?
 - How can you know your limits?

- How can you and your colleagues support one another?
- After:
 - How can you take time to rest, recover and reflect?
- PFA can be provided by professionals and non-professionals alike.
- Everyone should have access to PFA following a crisis event, as part of the spectrum of mental health and psychosocial support.
- PFA is widely used for disaster preparedness and response by governments, UN and NGOs.
- Resources are freely available and adapted to local languages and contexts: http://www.who.int/mental_health/publications/guide_field_workers/en/.

Things You Should **NOT** Do After Exposure to a Traumatic Event

- Don't believe you have to care for your co-worker if you feel mentally unable to do so. You won't be able to.
- Don't believe that you can't say what you are feeling. You need to.
- Don't attempt to reassure yourself or others that everything is "okay." It is not ok.
- Don't try to impose your explanation for what happened on others. This is just your opinion.
- Don't blame your self for what happened. This is not the time to accuse anyone –including yourself.
- Don't tell the persons that you know how they are feeling. You don't.
- Don't say to the other person that you know how they are feeling. You don't.
- Don't say to the person to simply forget about it. It isn't that simple.
- Don't feel pressured to respond when someone else is talking to you. Just being there is what matters most.
- Don't be afraid to ask someone else how they are doing. Your concern may be very uplifting for them.
- Don't try to talk someone else out of their feelings even if you don't understand their reactions to the incident. Just listen!

Notes

[illegible]





Exercises and Appendices

- Triage Exercises
- Appendix 1 – Recommended Checklist and Contents for Advanced Medical Posts
- Appendix 2 – Field Action Cards
- Appendix 3 - Sample AMP Log Sheet
- Appendix 4 – Sample AMP Patient Record Sheet
- Appendix 5 – Sample Data Sheet
- Appendix 6 – Sample Event/Message Log Sheet
- Appendix 7 – Sample Call Log Sheet
- Appendix 8 – Sample Transport Officer's Log Sheet
- Appendix 9 – Disaster Response Critique
- Appendix 10 – Sample Lines of Communication in the Field

Triage Exercises

Serial Number	First Level Triage	Triage Category
1	45-year-old. Wheezing; is in obvious respiratory distress.	
2	28-year-old. No obvious injuries; hysterical.	
3	10-year-old. Sucking chest wound. Cold, clammy, blue.	
4	80-year-old man. Extensive laceration to abdomen. Pulse weak, slow; not responding,	
5	18-year-old man. Iron sticking out of chest. Anxious; respiration is rapid and laboured.	
6	24-year-old woman. Compound fracture of the right forearm.	
7	50-year-old woman with burns to face. Respiration laboured.	
8	30-year-old man with burns to both legs.	
9	5-year-old with burns to 70% of body. Pulse weak; eyes staring blankly.	
10	25-year-old. Traumatic amputation of right leg. Extensive laceration of abdomen Bleeding. ++ Good volume pulse. Blue lips.	
11	30-year-old man. Traumatic amputation right leg. Bleeding+++ Good volume pulse.	
12	3-year-old child compound fracture of skull; brain protruding; both pupils fixed and dilated.	
13	17-year-old. Iron impaled in throat. Gurgling respiration, cyanosed.	
14	8-year-old. Laceration to neck; bleeding profusely. Breathing rapidly; mucus membranes pink; left thigh swollen.	
15	22-year-old. Multiple puncture wounds to chest. Pulse normal. No apparent distress.	
16	35-year-old. Screaming. Laceration to left leg. Minimal bleeding.	
17	45-year-old. Not responding to commands. Breathing is slow and deep. No obvious injuries.	
18	22-year-old. Traumatic amputation to both legs; No bleeding; pulse good volume.	
19	80-year-old man with laceration to left leg. No bleeding; strong pulse.	
20	12-year-old. Deformed forearm.	
21	24-year-old screaming non-stop. Laceration to right hand.	
22	24-year-old man. Behaving aggressively. Threatening first responders. Bruising to left arm.	
23	30 year old with extensive burns to body. Weak pulse.	
24	16 year old. Compound fracture right leg with exposed bone	

Serial Number	Second Level Triage	Triage Category
1	Pulse 120/min; RR 35/min; wheezing++ bilaterally.	
2	Now quiet, PR 100/min; BP 120/70mmHg; RR 18/min. Minor laceration to forehead. GCS 15/15	
3	Pulse 160/min; BP 60/?mmHg; RR 44/min; shallow breathing; decreased air entry on side of injury.	
4	Pulse rate 40/min; BP not recordable; mucus membrane pale +++ Unresponsive to pressure or pain.	
5	PR 110/min; BP 150/100mmHg; RR 40; decreased air entry on affected side.	
6	PR 100/min; BP 120/60mmHg; No active bleeding.	
7	PR 50/min; BP 80/?mmHg; RR 50/min with stridor. Soot in nose and throat.	
8	P 80/min; BP 120/70mmHg; RR 14/min. Third degree burns to both legs.	
9	No Pulse. No respiration.	
10	Pulse 50/min; BP 50/?mmHg; RR 50. No air entry on left side of chest.	
11	PR 120/min; BP 90/50mmHg; Pale+++	
12	Pulse 40/min; BP 80/30mmHg; Cheyne's Stokes respiration.	
13	Pulse 140/min; BP 100/55mmHg; RR 30/min. Blue lips.	
14	Pulse 40/min; BP 100/50mmHg; MM pale++ Bleeding +++	
15	Pulse 100/min; BP 120/80mm; RR 24; MM pink and moist.	
16	Pulse 100/min; BP 130/75mmHg; RR 16/min. Laceration clean.	
17	PR 100/min; BP 140/80mmHg; RR 12/min; Skin cool and clammy. RBS 0.6mmol/L (10mg/dl).	
18	Pulse 125/min; BP 150/70mmHg; RR 14/min; minimal bleeding from wound.	
19	Pulse 80/min; BP 120/60mmHg; RR 26/min; MM pink; left thigh swollen.	
20	P 120/min; obvious deformity.	
21	Pulse 120/min; BP 120/60mmHg; RR 30/min. Pupils dilated.	
22	Pulse 80/min; BP 120/68mm; RR 18/min; No deformity of left arm, no longer behaving aggressive.	
23	Pulse 130/min; BP 160/100mm; RR 25 80% 2nd degree burns.	
24	Pulse 130/min; BP 100/50mmHg; RR 25; Fracture site bleeding, bandage applied.	

Serial Number	Third Level Triage	Triage Category	Order of Evacuation
1	Severely distressed; intubated. Pulse 100/min; O2 sat – 70%		
2	Vitals stable. Sutured and dressed. Comfortable.		
3	P 85/min; BP 100/50mmHg; RR 20/min; MM pink, moist		
4	No vital signs.		
5	Chest tube in place, 2 litres blood drained; P 120/min; RR 25/min; BP 120/50mmHg.		
6	Forearm splinted; no distress		
7	Cricothyrotomy performed; RR 26/min; P100/min; BP 100/80mmHg.		
8	Pulse 130/minute; BP 100/50mmHg; No other signs of injury.		
9	No vital signs.		
10	Pulse 50/min; BP 40/?mmHg; Pale; chest tube in place; responds to commands. No improved air entry on the left side of chest.		
11	IVF going. No change in condition.		
12	No vital signs.		
13	No vital signs.		
14	No pulse detected.		
15	P110/min; BP 100/50mmHg; RR 24/min; IV x 2 going; Abdomen distended and rigid.		
16	Normal Vital signs.		
17	P 85/min; BP130/75mmHg; RBS now 7.2mmol/L (130mg/dl); Responding to commands		
18	P120/min; BP 60/?mmHg; Bleeding +++; IV x 2 going with no response		
19	P 100/min; BP 90/50mmHg; Responds to treatment.		
20	Normal Vital Signs. Wrist /forearm splinted.		
21	P120/min; BP 140/90/min; Develops seizures; pupils still dilated.		
22	P 85/min; BP 120/80mmHg; RR 16/min; Sitting calmly.		
23	P 130/min; BP 70/50mmHg; R 25/min.		
24	P 90/min; BP 100/60mmHg; Fracture dressed and splinted, bleeding is still evident.		

Appendix 1

Recommended Checklist and Contents for Advanced Medical Posts

GREEN AREA BOXES

Obvious labeling: Green flag or similar object with an appropriate choice of supporting base.

ID bibs

Staff

- One efficient nurse and/or general practitioner for each 10-12 victims.
- Red Cross personnel – First aid providers – Clerks – Volunteers.
- Psychosocial support team.

Instruments/Equipment

- Sphygmomanometers
- Obstetrical kit
- Flashlights, lanterns
- Scissors
- Clipboards, paper, pens, paper, tracking forms
- Paper clips/stapler, markers, masking tape/duct tape
- Disaster patient ID packs
- Disaster plan

Supplies

- | | | |
|---|---|---|
| <input type="checkbox"/> Alcohol swabs | <input type="checkbox"/> Emesis buckets | <input type="checkbox"/> Gauzes squares (4x4s, 2x2s) |
| <input type="checkbox"/> Bethadine swabs | <input type="checkbox"/> Arm splints | <input type="checkbox"/> Eye patches |
| <input type="checkbox"/> Gloves - non-sterile | <input type="checkbox"/> Wrist/finger splints | <input type="checkbox"/> Normal saline and syringes for irrigations |
| <input type="checkbox"/> Plastic aprons | <input type="checkbox"/> Soft cervical collars | <input type="checkbox"/> Tetanus syringes |
| <input type="checkbox"/> Water bags | <input type="checkbox"/> Arm slings | <input type="checkbox"/> Tongue depressors |
| <input type="checkbox"/> Madafoam/Madacid | <input type="checkbox"/> Collar 'n cuff | <input type="checkbox"/> Alcohol swabs |
| <input type="checkbox"/> Blankets—space and regular | <input type="checkbox"/> Bandages - crepe and gauze | <input type="checkbox"/> Steristrips |
| <input type="checkbox"/> Trash bags | <input type="checkbox"/> Jelonet | <input type="checkbox"/> Micro pore tape |
| <input type="checkbox"/> Kleenex tissues/paper towels | <input type="checkbox"/> Silvadene cream | |
| | <input type="checkbox"/> Xylocaine cream 2% | |

Medications

- Paracetamol
- Tetanus toxoid

YELLOW AREA BOXES

Obvious labeling: Yellow flag or similar object with an appropriate choice of supporting base.

ID bibs

Staff:

- One doctor for each 6-8 victims
- 1 ER nurse/ 3-4 victims
- Paramedics/EMT if available.
- Volunteers +/- clerks and errands
- Psychosocial support representative

Instruments/Equipment

- | | |
|---|--|
| ➤ Sphygmomanometers | ➤ Oxygen cylinders |
| ➤ Obstetrical kit | ➤ Scissors |
| ➤ Suture sets | ➤ Clipboards, paper, pens, tracking forms, paper clips/stapler |
| ➤ Urinary catheters and bags | ➤ Markers, masking tape/duct tape |
| ➤ Urinals, bedpans | ➤ Disaster patient ID packs |
| ➤ Naso-gastric tubes | ➤ Disaster plan |
| ➤ IV giving sets | |
| ➤ Head torches and/or flashlights, lanterns | |

Supplies

- | | | |
|--|--|---|
| <input type="checkbox"/> Alcohol swabs, bethadine swabs | <input type="checkbox"/> Emesis buckets | <input type="checkbox"/> Silvadene cream |
| <input type="checkbox"/> Gloves, sterile and non-sterile | <input type="checkbox"/> Blue pads (absorbent) | <input type="checkbox"/> Xylocaine cream 2% |
| <input type="checkbox"/> Plastic aprons | <input type="checkbox"/> Sharps disposal boxes | <input type="checkbox"/> Eye patches |
| <input type="checkbox"/> Face shields | <input type="checkbox"/> Oxygen lines/masks adult and paed | <input type="checkbox"/> Soft cervical collars |
| <input type="checkbox"/> Water bags | <input type="checkbox"/> IV fluids, NS, LR, D50W | <input type="checkbox"/> Leg splints |
| <input type="checkbox"/> Madafoam/Madacide (for waterless hand cleaning) | <input type="checkbox"/> IV catheters | <input type="checkbox"/> Arm, wrist splints |
| <input type="checkbox"/> Blankets—space and regular | <input type="checkbox"/> Syringes, various sizes | <input type="checkbox"/> Tongue depressors |
| <input type="checkbox"/> Trash bags | <input type="checkbox"/> Bandages: crepe and gauze | <input type="checkbox"/> Variety suture material, steristrips |
| <input type="checkbox"/> Kleenex tissues/paper towels | <input type="checkbox"/> Gauzes squares (4x4s, 2x2s) | <input type="checkbox"/> Micro pore tape/blenderm |
| | <input type="checkbox"/> Jelonet | |

Medications

- Paracetamol, Voltaren IM/PR,
- Tetracaine eye drops,
- Chloramphenicol eye ointment
- Tetanus toxoid

RED AREA BOXES

Obvious labeling: Red flag or similar object with an appropriate choice of supporting base.

ID bibs

Staff:

- 1 doctor for every 2 victims
- 2 ER nurses or paramedics per victim
- EMT, if available.
- Volunteers (for clerks and errands)
- Psychosocial support representative

Instruments/Equipment

- | | |
|--|--|
| <ul style="list-style-type: none"> ➤ AED ➤ Tracheostomy sets ➤ Portable suction - 4 ➤ Portable ventilator - 1 ➤ Oxygen cylinders - 6 ➤ Flow meters - twin and singles ➤ Urinary catheters and bags ➤ Urinals, bedpans ➤ Head torches, Flashlights, Lanterns ➤ Chest tubes sets (disposable) with evacuation drains ➤ Masking tape/duct tape | <ul style="list-style-type: none"> ➤ Disaster Patient ID Packs ➤ Copy of Disaster Response plan ➤ IV poles and "S" hooks (for loops in tent) ➤ Sphygmomanometers ➤ Stretcher easels (to raise stretchers. esp. for chest tubes) ➤ Glucometer ➤ Flask or Icebox (for drugs needing cold chain) ➤ Scissors ➤ Clipboards, paper, pens, paper clips/stapler markers, tracking forms |
|--|--|

Supplies

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> Airway bags [laryngoscopes, ambu bags, ET tubes, connectors, McGill forceps, 5 cc syringes, introducers and airways, K-Y jelly, batteries] <input type="checkbox"/> Gloves, sterile and non-sterile <input type="checkbox"/> Plastic aprons <input type="checkbox"/> Face shields <input type="checkbox"/> Clipboards, pens, papers, tracking forms <input type="checkbox"/> Water bags <input type="checkbox"/> Madafoam/Madacide (for waterless hand cleaning) <input type="checkbox"/> Blankets—space and regular—and sheets | <ul style="list-style-type: none"> <input type="checkbox"/> Trash bags <input type="checkbox"/> Kleenex tissues/paper towels <input type="checkbox"/> Emesis buckets <input type="checkbox"/> Blue pads (incontinent pads) <input type="checkbox"/> Sharps disposal boxes <input type="checkbox"/> Oxygen lines/masks adult and paed <input type="checkbox"/> IV fluids ~ NS, ER, D50W <input type="checkbox"/> IV catheters, IV giving sets <input type="checkbox"/> Syringes, various sizes <input type="checkbox"/> Nasogastric tubes <input type="checkbox"/> Bandages - crepe and gauze <input type="checkbox"/> Abdo packs <input type="checkbox"/> Gauzes squares (4x4s, 2x2s) | <ul style="list-style-type: none"> <input type="checkbox"/> Eye patches <input type="checkbox"/> Jelonet <input type="checkbox"/> Silvadene cream <input type="checkbox"/> Xylocaine 10% spray <input type="checkbox"/> Xylocaine cream 2% <input type="checkbox"/> Steristrips <input type="checkbox"/> Micro pore tape/blenderm <input type="checkbox"/> Soft cervical collars <input type="checkbox"/> Leg splints <input type="checkbox"/> Arm splints <input type="checkbox"/> Tongue depressors <input type="checkbox"/> Alcohol swabs, bethadine swabs |
|---|--|---|

Medications

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> ➤ Paracetamol ➤ Tetracaine eye drops ➤ Tetanus toxoid ➤ Voltaren IM/PR | <ul style="list-style-type: none"> ➤ Chloramphenicol eye ointment ➤ Anaesthetic drugs | <ul style="list-style-type: none"> ➤ IV Valium ➤ Narcotic analgesic to be added at time of mobilization |
|---|---|---|

Appendix 2

Field Action Cards

THE AMP MANAGER (physician, nurse, EMT, or paramedic)

- Must be trained in mass casualty management.
- Must be skilled in pre-hospital care management.
- Must be skilled in staff management.
- Ensures adequate equipment, supplies and staff are available in each treatment area.
- Supervises triage and stabilization of victims in the AMP.
- Establishes the internal organization of the AMP.
- Manages the staff in the AMP.
- Ensures that effective victim flow is maintained.
- In collaboration with the transport officer, command post and receiving health facility, organises the transfer of patients.
- Decides on the order of transfer of victims, mode of transport, and escort.
- Ensures staff welfare.
- Reports to medical representative in command post.

RED TEAM LEADER (physician, paramedic or nurse)

- Receives red patients from medical triage (2nd triage).
- Examines and assesses the medical condition of the victim.
- Institutes measures to stabilize victim.
- Continuously monitors the victims' condition.
- Reassesses and re-triages victims for evacuation.
- Requests evacuation in accordance with priority list.
- Reports to AMP manager.

YELLOW TEAM LEADER (physician, nurse or paramedic)

- Receives yellow patients from medical triage (2nd triage).
- Examines and assesses the medical condition of the victim.
- Institutes measures to stabilize victim.

- Supervises frequent monitoring of victim's condition.
- Reassesses and re-triages victims for evacuation.
- Supervises care to yellow prime victims after all yellow victims have been treated.
- Maintains a log of victims passing through the area.
- Supervises the recording of biodata (names, age, next of kin, and address) if not already done.
- Keeps amp manager informed of number of victims in yellow area
- Requests evacuation in accordance with priority list.
- Reports to AMP manager.

GREEN TEAM LEADER (nurse, paramedic or EMT)

- Receives green patients from medical triage (2nd triage) or field.
- Examines and assesses the medical condition of the victim.
- Re-triages victims with missed medical problems.
- Renders or guides first aid and care to victims, as needed.
- Reassesses and re-triages victims for evacuation (3rd triage).
- Maintains a log of victims passing through the area.
- Supervises the recording of biodata (names, age, next of kin, address etc.), if not already done.
- Keeps AMP manager informed of number of victims in green area.
- Requests evacuation of victims at appropriate time (usually by group transport).
- Reports to AMP manager.

EVACUATION OFFICER (physician, paramedic or EMT)

- Receives victims for evacuation.
- Assesses victim's stability.
- Manages the staff in the AMP.
- Ensures security of any equipment attached to the victim.
- Ensures that immobilization of the victim is adequate.
- Ensures tags are safely and clearly attached.
- Closely observes victims until they are transported.
- Supervises loading and ensures escort is briefed.
- Reports to AMP manager.

TRANSPORT OFFICER (fire officer, police officer, EMT)

- Coordinates and supervises the transportation of victims.

- Identifies access routes and communicates traffic flow to drivers.
- Institutes measures to stabilize the victim.
- Supervises all available ambulance drivers and drivers of assigned vehicles.
- Receives requests for transportation.
- Avoids vehicular congestion in evacuation area.
- Encourages the maintenance of a Noria wherever possible.
- Assigns appropriate vehicle tasks in accordance with specific needs.
- Maintains log of the whereabouts of all vehicles under his/her control.
- Reports to AMP manager.

AMBULANCE DRIVER (EMT, paramedic, driver)

- Reports to staging area and advances to evacuation area when called forward.
- Remains with vehicle at all times.
- Responds promptly to directives from transport officer.
- Ensures that vehicle is parked in designated area and is ready to move.
- Transports patients in accordance with safety rules and instructions.
- Radios to base at departure from site and five minutes before arrival at hospital.
- Reports to transport officer.

MEDICAL TRIAGE OFFICER (physician, nurse)

- Receives victims at entrance of AMP.
- Does rapid assessment of each victim, first on those who are coded red; then on greens.
- Categorizes and tags victims as red (critical), yellow (urgent), green (non-urgent), black (dead) or yellow prime (medically hopeless).
- Directs victims to appropriate treatment area.
- Reports to AMP manager.

MEDICAL CLERK (medical secretary, first aider, volunteer)

- May be placed at entrance to AMP (medical triage), evacuation area (AMP exit) or hospital entrance (4th triage).
- Maintains a register of all victims admitted through that area.
- Records name/id number, age, sex, next of kin, time of arrival and departure, mode of departure, escort if any, injury category assigned, and destination.
- Reports to medical triage officer or evacuation officer depending on location.

Appendix 3

Sample AMP Log Sheet

Mass Casualty Incident: _____ Date and Type of Incident _____

#	Name/ ID Number	Sex F/M	Age	Time In	Triage		Findings or Working Diagnosis	Triage 3rd R/Y/G/B	Destination Hosp/Clinic/ Other	Time Out	Mode of Departure Amb/Other	Escort
					1st R/G	2nd R/Y/G/B						

TOTALS: 1st Triage Red _____, Green _____

2nd Triage Red _____, Yellow _____, Yellow prime _____, Green _____, Black _____

3rd Triage Red _____, Yellow _____, Yellow prime _____, Green _____, Black _____

Recorder signature _____

Appendix 4

Sample AMP Patient Record Sheet



Date: _____ **Time:** _____ **Event:** _____ **Recorder's Signature:** _____

Name: _____ **ID Number:** _____
Date of Birth: _____ **Age:** _____
Telephone: _____ **Address:** _____
Next of Kin: _____ **Telephone:** _____
_____ **Nationality:** _____

Mode of Arrival: *Walking Human lifts Stretcher Backboard Ambulance Other*

SAMPLE: *Allergies- Meds- PMH- Last Meal- Events-*

Chief Complaint: _____

Airway: *Normal Compromised - mild mod severe Obstructed*

Breathing: *Normal Laboured - mild mod severe RR/min - <9 10-18 >20*

Circulation: *Pulse/min _____ Normal Rapid Weak Thready Absent*

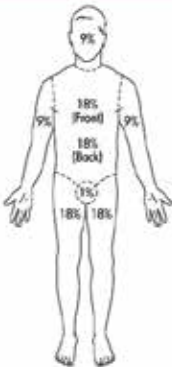
BP Palpable pulse distally at: radial femoral carotid absent

O₂ Sat: % MM: Pink Pale Cyanosis distally/centrally

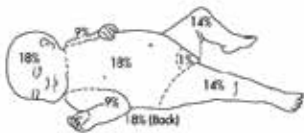
Disabilities: _____

AVPU/ GCS: *A V P U/* _____

Other Findings: _____



Disposition: _____



Time/ INTERVENTION

.....

Monitored Vitals

Time	BP	P	R	O ₂ Sat	GCS

Destination: *Hospital Clinic Morgue Other* _____ **Evacuation Decision Time** _____

Mode of Transport: *EMS Bus Car Other* _____

Escort: *Dr Nurse EMS Red Cross Volunteer Other* _____ **Actual Time of Loading** _____

Appendix 5

Sample Data Sheet

Victim Bio-data				Next of Kin Info		1st Triage		2nd Triage		3rd Triage		4th Triage	
Name	ID #	Age	Sex	Name	Tele #	Time	Code	Time	Code	Time	Code	Time	Code

Recorder signature _____

Appendix 6

Sample Event/Message Log Sheet

Date: _____

Time	Request / Message	Who From	Actions Taken	Outcome

Recorder signature _____

Appendix 7

Sample Call Log Sheet

Page: _____
Date: _____

Time	Message	Who From	Who To	Action(s) Taken

Recorder signature _____

Appendix 8

Sample Transport Officer’s Log Sheet

Page: _____
Date: _____

Time	Vehicle Type/ License #	Name of Driver	Patient(s) Loaded (Name or ID number)	Time Out	Total # of Occupants	Destination

Recorder signature _____

Appendix 9

Disaster Response Critique (Form 1 of 3)

Recorder signature _____

Date _____ Time: _____ Department/ Group being assessed _____

Scoring Guidelines

- 0 No Response Plan expectations met
- 1 Obvious lack of knowledge or motivation by staff
- 2 Most expectations not met; many significant issues omitted
- 3 Most expectations met; some significant issues omitted.
- 4 Only minor issues noted.
- 5 All components appropriately executed.

Situation /Event:

HazMat Incident	Radiation	Hostage/Aggressor	Mass Casualty Incident	Bomb threat	Explosion
Severe Weather	Civil Unrest	Fire	Major Utility Disruption	Structural Collapse	Evacuation

ALERT, RESPONSE, STAFFING, SUPPLY MANAGEMENT

Score: _____

(Score of 5 for each area)

	Yes	No	N/A	Yes	No	N/A
Was proper initial activation made?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was appropriate initial team(s) dispatched?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was scene safety assessed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was AMP vs. non-AMP response considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was Callout List implemented & up-to-date?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were Job Action Sheets assigned within 10 minutes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was appropriate internal staff notified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was AMP vehicle dispatched in a timely manner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 9 (continued)

Disaster Response Critique (Form 2 of 3)

Recorder signature _____

Date _____ Time: _____ Department/ Group being assessed _____

Scoring Guidelines

0

No Response Plan expectations met

1

Obvious lack of knowledge or motivation by staff

2

Most expectations not met; many significant issues omitted

3

Most expectations met; some significant issues omitted.

4

Only minor issues noted.

5

All components appropriately executed.

Situation /Event:			
HazMat Incident	Radiation	Hostage/Aggressor	
Severe Weather	Civil Unrest	Fire	
		Mass Casualty Incident	Bomb threat
		Major Utility Disruption	Structural Collapse
			Explosion
			Evacuation

ALERT, RESPONSE, STAFFING, SUPPLY MANAGEMENT

Score: _____

(Score of 5 for each area)

	Yes	No	N/A	Yes	No	N/A
Were additional AMP supplies collected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was staffing adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were staff needs and/or exposures addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did staff display competence during the emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was all medical treatment adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was PPE utilized and adequate for the situation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was building or area secured/ locked down?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was Noria principle demonstrated for traffic flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were non-medical patient needs met?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Were correct lines of communication respected?		
				Did Admitting Office get timely patient information?		
				Was good intra- agency communication demonstrated?		
				Were all patients triaged appropriately?		
				Was provision made for tracking of patient information?		
				Was adequate security provided?		
				Was traffic control established and enforced?		
				Were unauthorized persons kept away from scene?		
				Was a press/family spokesperson assigned?		

Appendix 9 (continued)

Disaster Response Critique (Form 3 of 3)

Recorder signature _____

Date _____ Time: _____ Department/ Group being assessed _____

Scoring Guidelines

- 0 No Response Plan expectations met
- 1 Obvious lack of knowledge or motivation by staff
- 2 Most expectations not met; many significant issues omitted
- 3 Most expectations met; some significant issues omitted.
- 4 Only minor issues noted.
- 5 All components appropriately executed.

Situation /Event:		Mass Casualty Incident		Bomb threat		Explosion	
HazMat Incident	Radiation	Major Utility Disruption		Structural Collapse		Evacuation	
Severe Weather	Civil Unrest						

ALERT, RESPONSE, STAFFING, SUPPLY MANAGEMENT

Score: _____

(Score of 5 for each area)

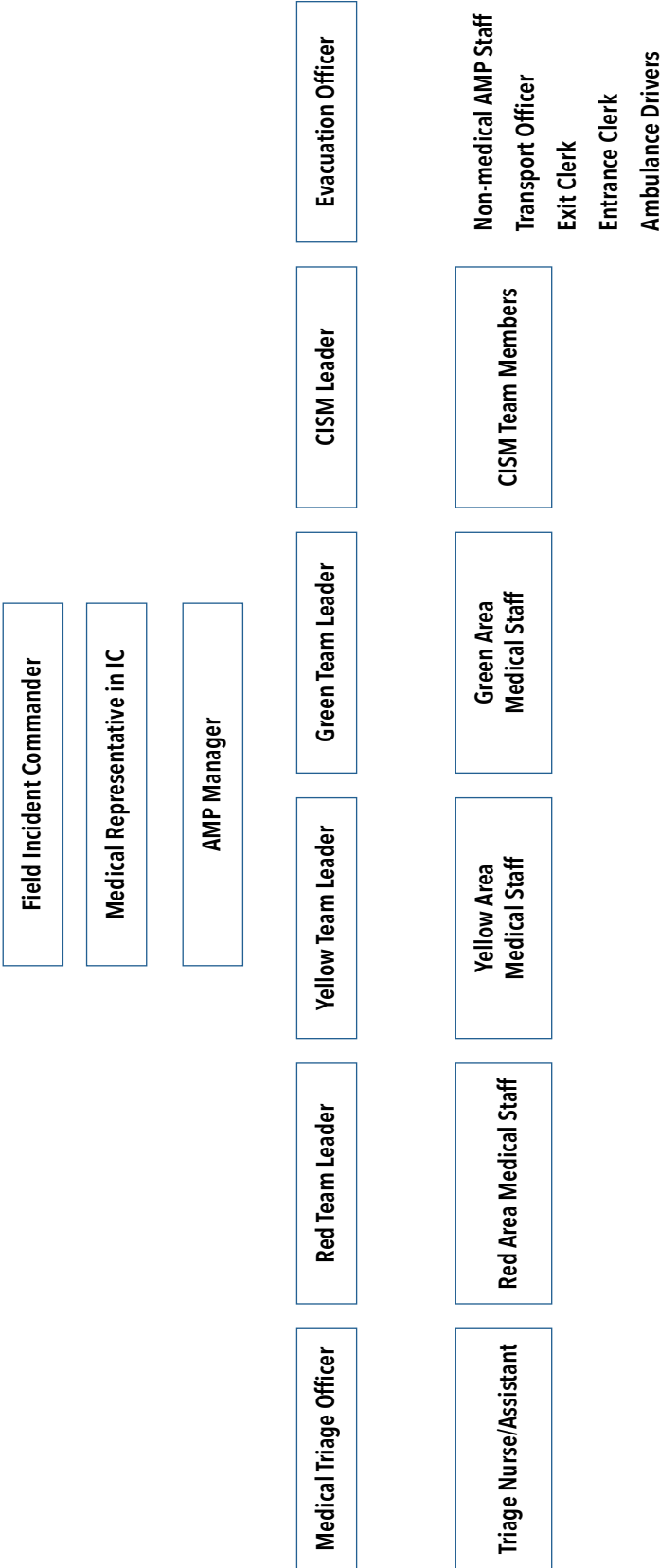
	Yes	No	N/A	Yes	No	N/A
Were family members addressed and updated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was Incident Command Center established/used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was property damage reported to Command Center?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was loss of facility function managed appropriately?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were communication tools (radios, etc.) well utilized?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was Incident Commander activated appropriately?						
Was there appropriate inter-agency contact/coordination?						
Where alternate care sites utilized when needed?						
Was an "All Clear" or "Stand Down" order issued?						

Corrective Action required: _____

Person(s) responsible/ Target completion date: _____

Appendix 10

Lines of Communication in the Field



References

Jane's Mass Casualty Handbook: Pre-hospital, *Emergency Preparedness and Response*
www.janes.com.

Jane's Mass Casualty Handbook: Hospital, *Emergency Preparedness and Response*
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PAHO/WHO, *Establishing a Mass Casualty Management System*. (1995).

Briggs and Brinsfield, *Advanced Disaster Medical Response, Manual for Providers*, 2003.

World Health Organization. Psychological first aid: Guide for field workers. (2011). Available online at: https://www.who.int/mental_health/publications/guide_field_workers/en/.

U.S. Federal Emergency Management Agency (FEMA). ICS Modules: 100, 200, 300. (2007).

Notes

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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Organization



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