Take Step 1 For a Safe Life!

İstanbul Seismic Risk Mitigation
Emergency Preparedness Project
ISMEP

Disaster Preparedness for Local Disaster Volunteers

ISTANBUL AFAD
PROVINCIAL DISASTER AND EMERGENCY DIRECTORATE

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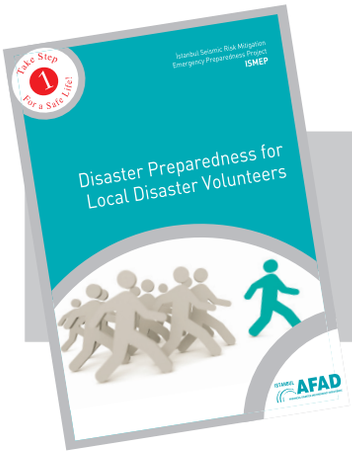

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Dear residents of Istanbul,

Istanbul is a city, which is under the threat of earthquakes and many other disaster risks. In many parts of the world, precautions are taken and some preparation plans are carried out against these kinds of risks. In Turkey, there are studies, which aim at the protection of public buildings, particularly schools and hospitals, and historical monuments and there are retrofitting studies for the whole infrastructure system, especially for transportation and communication, with the participation of the professionals in our country by evaluating the studies made in developed countries.

Physical retrofitting studies have the aim of eliminating the physical threats by earthquakes. But the case of earthquake preparedness is not limited with these activities. What's more important is to change our way of life in such a way to be ready for earthquakes and to be more sensitive for our surrounding.

In order to be ready for earthquakes firstly at individual and then at the national level, we should know about earthquakes, we should develop ourselves by having safe life awareness at our home, in our offices and surrounding, we should get training and above all we should become conscious about what we can do before a possible earthquake strike.

Therefore, we have prepared these awareness raising and training materials to reach you by the means of ISMEP (Istanbul Seismic Risk Mitigation and Emergency Preparedness Project), which is conducted by Istanbul Governorship Provincial Disaster and Emergency Directorate and Istanbul Governorship Special Provincial Administration Istanbul Project Coordination Unit. The documents, which are prepared with the help of specialists from civil and private sectors, are given the last shape after the controls of experts and relevant departments.

Fifteen different training titles have been defined for our editions, which require the preparation of different documents with different themes and appropriate contents for them have been developed to reach all our citizens living in Istanbul and to ensure the institutional preparedness in every sense. We wholeheartedly believe that these training materials which are thought to be appreciated by each institution and individual would meet an important need. Before anything else, to know that our dear citizens would benefit from these activities that would help earthquake preparedness, gratifies us and enlivens our studies.

In Istanbul, where the future is strengthened by us, we share happiness of looking to the future with confidence.

Best regards,
Muammer Güler
Governor of Istanbul

Within the context of Enhancing Emergency Preparedness Capacity, which is the A component of Istanbul Seismic Risk Mitigation and Emergency Preparedness Project, multiple cooperation has a significant role in Community Disaster Preparedness Training Materialsí shaping within the framework of best practice and achieving objectives.

Within the framework of this project, which is a product of long and intensive study, and emerged in the light of profound knowledge and experiences of a good deal of people and institutions, we thank all public corporations and institutions who do not withhold their contributions from us;

Republic of Turkey Prime Ministry 'The Presidency of Disaster and Emergency Management Agency'
Republic of Turkey Prime Ministry Undersecretariat of Treasury and Foreign Trade
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Istanbul Chamber of Industry
Turkish Red Crescent Society Training Department
Neighbourhood Disaster Volunteers Foundation
Istanbul Anatolian Side Neighbourhood Disaster Volunteers Association
Search and Rescue Association (AKUT)
Istanbul Union of Chamber of Merchants and Craftsmen
Radio Amateurs Association
Confederation of Turkish Chamber of Merchants and Craftsmen Union
Confederation of Turkish Labor Unions
Social Service Employees Association
Turkish Psychological Association
The Psychiatric Association of Turkey
Turkish Federation for the Physically Disabled
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Republic of Turkey Governorship of Istanbul
Provincial Disaster and Emergency Directorate

CONTENT

I. INTRODUCTION

Disasters are the events that suddenly happen in a geographical area, cause mass stress and lose at a certain level and influence the social life. (Tierney, 1989). There are things to be done before, during and after disasters to get prepared and mitigate them. Especially, raising the awareness of society about disaster preparedness and mitigation activities, improvement of their risk perception, acquisition and organization of certain skills and sources are important.

As it is commonly known everybody is on his/her own during the first minutes of disasters. The knowledge and the preparedness of the individual will protect him/her against the damages of disaster. In no country on the world it is possible for the teams like health, fire and search and rescue to reach all the people at the same time immediately. Therefore it is important for everyone to get prepared for the "first 72 hours" which are called as "the golden hours after a disaster".

The response phase which is an important part of disaster management includes the quick detection of disaster situation and demands, establishing a multi directional communication, fast transportation of sufficient, proper equipment and trained staff to disaster area and the activities of emergency health services and volunteer teams. During the response phase of extraordinary situations like disasters many victims are rescued by their families, neighbours and the neighbourhood residents until professional search and rescue teams arrive. In such events where there are loss of life and property and the social life is affected deeply helping people with humanistic feelings will not be enough and even those unprofessional response activities may cause loss of life and injuries rather than saving lives. Therefore establishing "Disaster Response Teams" that have volunteers with basic information, skills and equipments is important to response until the professional teams arrive in case of a disaster.

Local Disaster Volunteers (LDV) are organised groups including individuals whose disaster sensitivity and awareness are improved against disaster risks and the precautions to be taken and whose capabilities for response activities during the first hours after a disaster until the professional teams arrive are enhanced through necessary trainings and equipments.

Local Disaster Volunteers (LDV) may take part in extinguishing small scale fires at the beginning level, the cut off of infrastructure services like gas and electricity, responsing life-threading small injuries, light search and rescue works, the conciliation of disaster

victims. So in order to accomplish the works mentioned here and struggle against those difficulties it is important for the individuals to get prepared, do planning and cooperate with their family members, neighbours and colleagues.

Volunteerism: Volunteerism may be defined as supporting a social enterprise or the activities of a non-governmental organization (NGO) in order to improve the quality of someone's family or relatives' lives or to achieve an aim which is generally thought to be for the benefit of society without expecting any material thing in return or being in an expectation just for feeling and believing it's right. Volunteers must have the skills such as knowledge, experience, energy, tolerance, participation, establishing humanistic affairs, professional approach and taking responsibility. The first and the most essential feature of a volunteer is to be a"volunteer" free heartedly.

During disasters the role of volunteers is to use their knowledge, skills and potentials in other words all of their moral and material support for the benefit of society without expecting anything in return. In this framework it is absolutely very important for Local Disaster Volunteers, who works to help people until the professional teams arrive after a disaster and to carry out the support activity under the command of professional teams after they arrive, to have high disaster awareness and preparedness, necessary training and equipments, and to be an organised VOLUNTEER group that includes the citizens with high potential and capability for the response activities during the very first hours after a disaster.

In addition to this there are some advantages of being a Local Disaster Volunteer. And in a way they match up with the reasons that lead the people to work as an LDV:

Pleasure and moral enrichment: Every Local Disaster Volunteer takes the pleasure of providing benefit for society without expecting anything in return and improve his/her life experience. No matter how hard and troubled the work is, using the time and the resources efficiently and taking pleasure from the results of the work is one of the most encouraging factors of voluntary work.

Development of self confidence: Working with volunteer and professional teams may help Local Disaster Volunteer, who stay out of professional life and do not have any experience of social cooperation, to gain self confidence in other social projects.

Increase in the skills of team work: Similarly, the volunteers who do not have any experience of team work may improve themselves and acquire new skills by learning to work in a disciplined way that requires adaptation, coordination and cooperation in line with an objective. The individuals who take bigger responsibilities among Local Disaster Volunteers and coordinate them may improve their "leadership" skills during this process.

Strengthening social status: A Local Disaster Volunteer who works for the benefit of society may improve his/her social prestige and may be appreciated by the society for these efforts. This appreciation and respect may be shown to Local Disaster Volunteer by the individuals he/she helps and nongovernmental organizations or the whole society, as well. **But it does not give the right to LDVs to think themselves superior of the people they help or the other members of the society. "Modesty" should be one of the virtues of volunteerism.**

Making new relations and friends: Whether they are sociable or not each Local Disaster Volunteer can have new friends and contacts through voluntary works. In other words voluntary work provides a means of socialization.

The atmosphere of a team work that a Local Disaster Volunteer participates in will make the use of some oral expressions impossible and inappropriate. These statements are against the content and the spirit of the mission and also the spirit of Local Disaster Volunteer even if he/she is unaware of it. As a part of Disaster volunteerism "I" and "mistake" are the first two terms that should not be used by a Local Disaster Volunteer in terms of showing the right manners and behaviours. And the third one is the "professional". Especially to avoid using the first two terms is important to reveal that the search and rescue is a team work and the team members have this team spirit.

"I": Search and rescue activities depend on efficient team work. In many subjects, the term of "we" should be used instead of "I" to clarify the coordinated team work.

"Mistake": The word mistake defines an error made; besides it evokes some negative connotations that depended or not on this mistake. But since people learn from their mistakes, they should be seen as an opportunity for personal development. In reality, the constant mistakes made during the ongoing training activities are known as encouraging. When the negative feeling of the word "mistake" is considered, it has no place in search and rescue activities and it also leads some negative feelings that may prevent the training activities later.

"Professional": Although generally this term defines the person who receives money from his/her work, it can be used to define the terms "skill", "capability" and "proficiency", as well. Since most of the search and rescue volunteers consist of "volunteers" who do

not receive money from their works, it should not be mentioned with the term "professional". Although the term "volunteer" is being used as "the professional without any equipment" in emergency response field and before the law this term is open to discussion. Consequently, the term "professional" should not be used since it has different connotations but the term "expert" should be preferred instead of it.

In normal life, many times people decide the things they want to do or not unconsciously. Before a rescue work, the possible advantages and risks of the actions should be compared and decided according to the situation. In parallel with this, the most important four factors that a Local Disaster Volunteer should take into consideration are as it follows:

1. **Your safety first.**
2. **Safety of your rescuer friends**
3. **Safety of the disaster victim**
4. **Safety of environment**

The points mentioned above will be the first safety concept among the priorities of search and rescue activities. There will be no search and rescue activity without search and rescue teams. Therefore LDVs always should be prepared, capable and trained about search and rescue. The unpreparedness and "undermining" of a rescuer will affect the performance of other rescuers as well. In some cases of search and rescue staying aloof is preferred to the activities unconsciously done and resulted in negative drawbacks.

Different from an art or science search and rescue is a field that has varieties at extreme points in itself. For instance, a method which is useful in a case may cause loss of life in other one. That's the reason why LDVs should get information from different sources and should be trained through corroborating this information with their experiences.

One of the main factors of current search and rescue activities in saving life is the individuals' awareness of their limits. The lack of such information is the primary enemy of search and rescue.

It is crucial for LDVs to know their skills and limits very well and improve them, to want to be an inevitable and necessary part of an operation and to accept being a part of the team. Within this framework individuals who will take charge as an LDV should have the qualifications below:

- To be open to have training and learning
- To be aware of their limits
- To be eager to work within the standards of the relevant official institutions
- To be open minded

- To be willing to work with others and compatible to team work

An LDV means working in search of perfectness with a professional attention and putting your heard to the work carried on. After providing these conditions, an LDV will perform search and rescue activities successfully.

But there is a very important point which should not be forgotten:

LDVs can make search and rescue activities only in light and moderate damaged buildings. Heavy search and rescue activities should be left to professional teams because the trainings and the experiences of LDVs require it. LDVs should inform the professional teams about what, where and how they worked until that moment when they arrive and the current situation and then they should help search and rescue activities under the command of professional teams.

II. DISASTER PREPAREDNESS

Our country is under the threat of disasters especially like earthquakes, floods, storms, droughts and avalanches. The most prominent effects of earthquakes in settlements are the destruction and the damage of structural environment.

Many buildings like dwellings, working places, factories, schools, hospitals, heritage buildings would be damaged or demolished after an earthquake. Apart from this, some vital infrastructural factors like highways, railways, communication networks, water supply networks, natural gas pipelines would be damaged. All of these negative events stop the daily life. This disruption mainly depends on the earthquake magnitude and the preparations of the society regarding earthquake mitigation. After destructive earthquakes mitigation and recovery activities for structural environment may extend over a period of time.

Since most part of our country's lands are under earthquake risk and there are important industrial enterprises on these lands along with the fact that majority of population is dwelling here it becomes more dangerous. In order to take a lesson from the past earthquakes and mitigate the future ones, training of the public, mitigating earthquake risks in settlements and structures, making new regulations, planning the things to be done during and after an earthquake are of vital importance.

Basic Information and Concepts

In disaster preparedness the most encountered concepts are hazard, risk, vulnerability and capacity.

Hazard is a physical condition caused by nature, technology or human which may occur in a certain spam of time and geography and create negative effect on people, physical structures, environment and community (Figure 2.1-a).

Risk is the probability of a hazard to turn into a disaster and the expected negative results, losses caused by it depending on physical, social, economic, cultural and political reasons (Figure 2.1-b).

Vulnerability is the lack of necessary characteristics and sources (capacity) of the individuals, societies, institutions or countries in terms of hazard exposure, coping with it and mitigating the effects of it (Figure 2.1-c).

Capacity is the qualities and the sources of individuals, societies, corporations or countries on estimating the effects of a hazard, coping with them and protecting, providing and improving with minimum or no loss (Figure 2.1-d).

Figure 2.1: (a) A broken bottle in the beach is just a hazard as long as the beach is empty. **(b)** If there is a person walking on the beach in bare feet, a broken bottle is a risk for him/her.**(c)** The person who walks on the beach might get harm when he/she steps on a broken bottle as a result of his/her walking in bare feet.**(d)** The person who wears slippers has the capacity of getting no harm from broken bottle by considering the possibility of danger on the beach.

What creates the risk is the cluster of hazard and vulnerability elements. On the other hand capacity is the opposite of vulnerability; as the capacity strengthens, vulnerability, therefore probability of a hazard to turn into a risk reduces. To sum up, what reduces or increases the disaster risk is the disaster vulnerability degree of a community. When the disaster vulnerability degree is decreased by hazard mitigation exercises, the disaster that we are exposed to would be minimized as well.

For a hazard to turn into a disaster it is supposed to give huge harm to life, natural surrounding, property and business continuity. For this reason, according to the definition of United Nations, disasters are the situations which the local facilities are insufficient to cope with the negative effects of a hazard on life, property, surrounding, economy and cultural values. Natural events like earthquake, flood, landslide, and thunderstorm are named as natural disasters when they cause big losses of life and property in regional and governmental level or when international aid is required.

Emergencies are the bad effects of a minor hazard on life, property and surrounding which could be overcome with the local possibilities. For example a house fire which can be extinguished by a local fire is characterized as an emergency situation.

All hazards and risks may not be totally eliminated but they can be mitigated. Disaster management starts with the risk management including mitigation and preparation activities The second part of disaster management is crisis management. In crisis management, response and recovery activities related to disaster or emergency situations are done (Figure 2.2).

Figure 2.1: Basic Concepts.

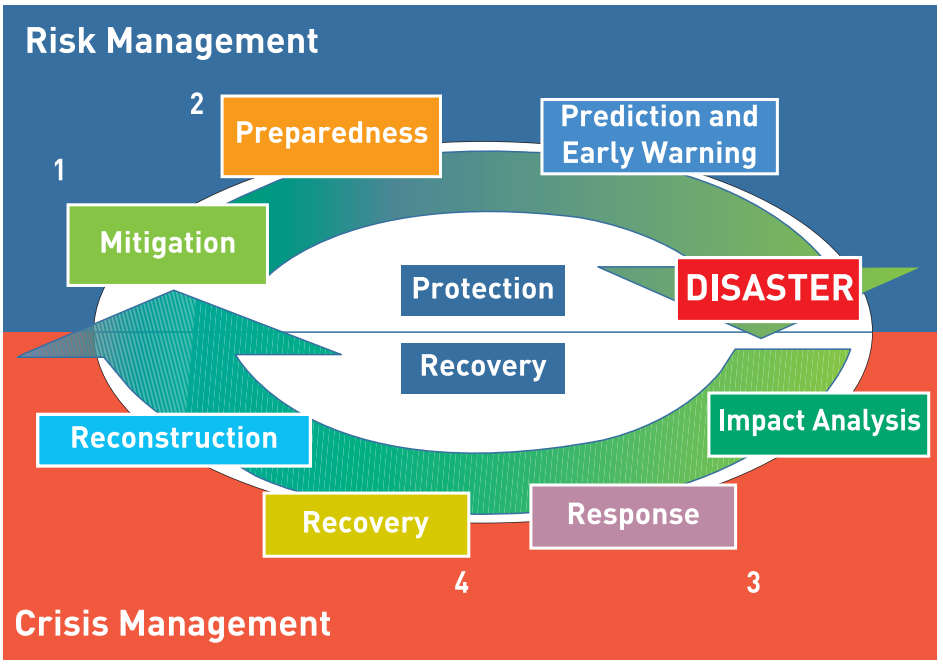


Figure 2.2: Schematic illustrations of main and intermediate stages of integrated disaster management system.

Disaster Prevention

In Marmara Earthquake 1999 unsound structures, unfastened objects and unawareness of people who do not know what to during an earthquake caused deaths. It is normal that structures suffer damage in the earthquake but it is an inacceptable situation that they collapse as small pancakes.

The destructive and disruptive effects of disasters immediately show themselves. The normal flow of life stops, unrepairable damages happen in infrastructures. There will be power and water cut, communication halts. The roads are destroyed and transportation stops. In this situation professional teams cannot respond immediately because it takes a long time to reach disaster area. Therefore it is vital for individuals and families to get prepared beforehand for disasters.

Disaster consciousness and disaster preparation should be a part of individuals' safe life culture. Safe life is to live avoiding from the damages caused by any kind of hazard in other words it is to live with awareness and preparedness. In order to be protected from them, we should learn and teach basic knowledge about earthquakes and fires that might occur in each day of the year; strong winds of the autumn; snow; rainfall in the spring; floods, thunderstorms and landslides, sunbathing in the summer and heat waves, forest fires.

When we prepare for disasters as an individual and family we should take special precautions for all disabled groups and people who need special care. To sum up, at first with precautions given below we should mitigate hazards beforehand related to disasters like an earthquake, we should also be prepared for the disaster moment and after it.

First of all, we should be careful about whether our cities and houses are constructed according to safe building and construction rules. In the house by doing "earthquake hazard hunt", we should define the objects that might slide and fall down or cause physical injuries by breaking during an earthquake, fasten these objects or change their places. We should define safe and unsafe places in our houses. Before the earthquake we should prepare an Earthquake Kit and Family Disaster Plan. We should learn how to perform DROP, COVER and HOLD during an earthquake. After the earthquake we should take necessary precautions such as turning off the infrastructure systems like electricity and natural gas, not using any source of fire and gathering in determined places in family disaster plans.

For further information:
First 72 Hours for the Individual and Family in an Earthquake Training Book

Disaster Resilient Urbanization: One of the factors that affects structural damage in an earthquake is local ground terms because local ground terms and behavioural features differ in each area. In earthquake resistant structure design, different behavioural features of the grounds should be taken into consideration (Figure 2.3). For this reason these features should be defined according to type and importance of the structure on-site or in the laboratories with special methods.

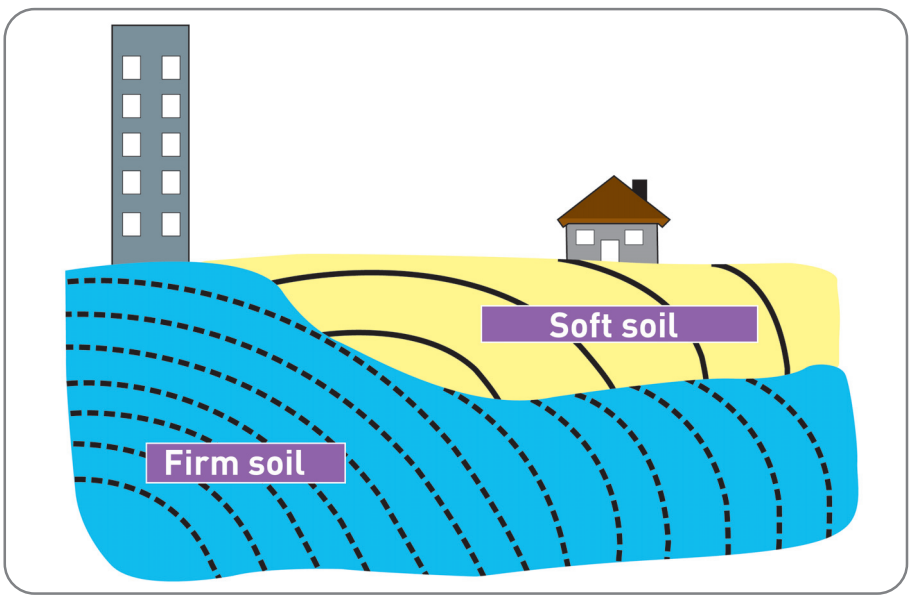


Figure 2.3: Different behaviours of seismic waves on different grounds.

During the urban planning, all disaster hazards should be taken into consideration in empty areas which are thought to open to settlement. In structured areas all disaster risks should be defined on large scale maps and as a result of this safe land usage and zoning decisions should be taken. While defining strategic purposes, objectives and priorities for urban regeneration and mitigation planning studies, useful researches that provide information should be done. Studies with all of these purposes are named as defining disaster hazard and risk in local scales or micro zoning studies.

For Further Information:
Urban Planning and Construction for Disaster Mitigation Training Guidelines

Prevention of Structural Damages: After the earthquakes that we have experienced in previous years, there has been great life and financial losses. Nevertheless building quality of most of the structures that we live and work is below their supposed level. In other words significant part of the structural risks in our country arises from the fact that buildings are not constructed according to construction standards. Due to inadequate activity of control mechanism during structuring even in current buildings, significant inadequacies thus significant risks can be a matter of fact.

In order to prevent significant loss of life and financial losses in earthquakes, buildings that are inadequate in terms of earthquake resistance should be retrofitted or should be demolished and rebuilt. When deciding among demolishing, retrofitting and rebuilding, the social, cultural and historical value of the building should be taken into consideration together with the economical and technical criteria.

When taking the decision of rebuilding or retrofitting many different factors are effective. In buildings which do not have a special social, cultural and historical value, if retrofitting cost exceeds 40% of demolishing and rebuilding costs it could be concluded that demolishing and rebuilding is more reasonable than retrofitting.

In order to make retrofitting easier for disaster hazard in existing buildings a certain number of changes are made in Law of Property Ownership and special provisions are carried out related to buildings. The main changes can be listed as below:

- As a part of load-bearing system girder, column and curtain walls together with the

other parts of load-bearing system would be considered as common places of the main real estate; In other words elements of load-bearing system would accepted as common property of flat owners.
- Repairment, construction, external paint and whitewash could be done by getting all of the flat owners' agreement, with the amendment in 19th article; this kind of repairment can be done by taking the written permissions of four out of five.
- Again with the amendment in this article for proper repairment and retrofitting, agreement of the flat owners would not be taken into consideration as long as it is confirmed by the court that damages in common places give harm to main structure or independent parts require urgent repairment or retrofitting of the main structure is essential.
- With the amendment in 20th article besides repairment expenses of common places flat owners would contribute to the retrofitting expenses in terms of land share proportion.

It is possible to divide structural risks into two. First one is the risks that are emerged as a result of non-structural components' getting harm. Among them the risks that are emerged a result of collapsing of partition walls, effusion, falling down, cracking of plaster, glass breaking or so forth damages can be mentioned. Second kind of risks would happen in case load bearing elements would get harm. In case these kinds of risks emerge damages would be much bigger even the structure would completely collapse. If the load-bearing system of a structure's earthquake safety level is higher in terms of column, girder, curtain, base, floor the risk is lower. Or in contrast to this, the lower safety level, the higher risk of financial loss and loss of life. The main reasons of low safety level in structures are those:

- Not putting correct and enough stirrups on junctions of columns and girders
- Inadequate concrete strength or concrete is burnt
- Very small column sections
- Existence of mezzanine floor in structure

To sum up, considering our existent structure stock it is understood that our country is under much bigger risk compared to various earthquake-prone countries. Both in our big cities and rural areas buildings suffer harm even in small earthquakes and collapse as well. Even in analysis and evaluations that are made just after an earthquake it is observed that there are no remarkable damages in buildings that are projected and constructed according to earthquake regulations.

In order to minimize life and financial losses in future earthquakes new buildings should be constructed according to related rules and regulations and collapsing buildings with inadequate earthquake safety level and reconstruction or retrofitting have great importance.

For Further Information:
Structural Risk Mitigation Against Earthquake Training Book
Structural Retrofitting Against Earthquake Training Book

Prevention of Nonstructural Damages: In our country at least 50% of physical injuries and 3% of deaths in earthquakes are due to nonstructural risks. These risks are as a result of object usage. For this reason, taking simple precautions at home (like fastening objects) will prevent physical injuries during a disaster. To be prepared for disasters and harm reduction, there are simple precautions to be primarily taken for everybody in their houses.

If the wardrobe next to our bed is overthrown does it fall on us? If our library is overthrown who will be injured? Can objects like saucepans, fryers in cupboards fall on our heads?

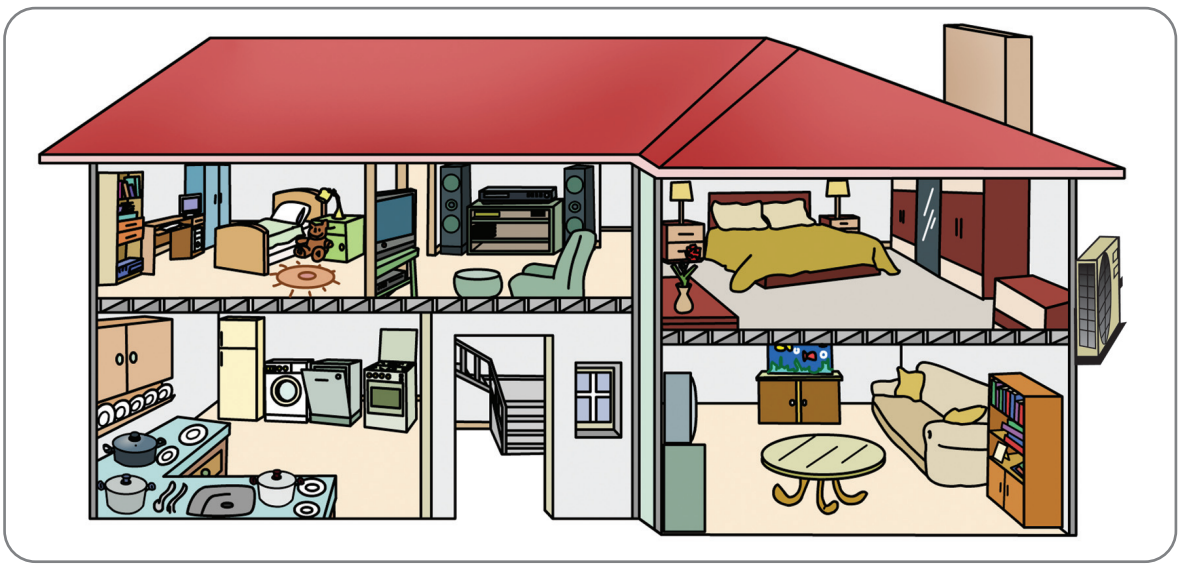


Figure 2.4: Everything that would move, slide, fall, and break during an earthquake is dangerous.

We should not forget that everything that would move, slide, fall, break during an earthquake is dangerous. For that fasten all your objects immediately against to shake.

In order to do Hazard Hunt and define safe places, take the photos of your classes and/or each room of your house. Then mark safe and dangerous places on these photos according to criteria given below. Do not forget, you should try to use the safe places as much as possible at the moment of an earthquake (Figure 2.4).

Places that would be safe are these:

1. Under or near sturdy object
2. Inside of corridors

Risky places and objects are these:

1. Surrounding of glass and mirror
2. Under the any objects that might fall down (suspended celling, air-vent pipes, lightening objects)
3. Oven
4. Refrigerator
5. Cupboards
6. Doorways

You should share tasks at home and do listed works on the table (Figure 2.5) to mitigate nonstructural risks. First of all, before going inside of your house raise your head and look at your building's surface or take the photo of your building's surface. Later on, mark the objects which can fall down at the moment of an earthquake on the photo. During a possible earthquake objects like tile, brick, flowerpot, air conditioner, signboard, chimney, glass might fall. For this reason, at the moment of an earthquake going out is very dangerous. Besides, flowerpots and so forth objects should not be put on window seat, air conditioner equipments should be installed in a way that might never fall down in an earthquake.

For Further Information:
Non-structural Risk Mitigation Against Earthquake Training Book

Family Disaster Plan

Disasters can happen at any time and place and turn into frightening dimensions. For instance you have to abandon your home. Official disaster institutions might not provide your needs immediately. Besides you do not have enough time to think during an earthquake. Give up thoughts like "It does not happen here. Even it happens nothing would happen to me" and do not postpone your preparations.

You should definitely make preparation and a disaster plan as a family (Figure 2.5). For instance, at the moment of an earthquake family members might be at different places. It might not possible to communicate between each other during the first hours. As intercity communication can be earlier and easier a person from a different city should be chosen and after the disaster everybody should call him/her and both give and take information about himself and the other family members. Besides this, in order to prevent a deadlock at lines providing communication via short messages is an effective solution.

DISASTER PLAN OF ..... FAMILY

The person to call out of the city
Name _____
City _____
(Home number) _____
(Work Number) _____

The person to call in the city
Name _____
(Home number) _____
(Work number) _____

Relative
Name _____
City _____
(Home number) _____
(Work number) _____

Work numbers of the family
Father _____ Mother _____
Other _____

Emergency phone numbers
In an emergency call 155 or 112 or call these numbers in your city:
Police _____
Fire department _____
Hospital _____

Meeting places
1. At home _____
2. Next to home _____
3. Away from home (if you can not return to home)
_____

Address _____
Phone _____
The first route _____
_____

FAMILY DISASTER PREPAREDNESS WORK PLAN AND CHECK LIST

- ☐ We have defined tne insecure places at home (for instance; window fronts, sides of big, heavy, rollable and flammable objects)
- ☐ We have put our torches and slippers next to our beds.
- ☐ We have learned the places of electric, water and gas valves and how to turn off them.
- ☐ We have bought a fire extinguisher device for our home and learned how to use it. We have a smoke detector at home and we have been changing its batteries two times in a year.
- ☐ We have planned to take or repeat a first aid course.
- ☐ We have prepared our first aid kit.
- ☐ We have prepared our disaster kit. The places and the preparation date of disaster kit: .....
- ☐ We have defined the evacuation ways from the building and marked them on the sketch.
- ☐ We have finished "Hazard Hunt" at home.
- ☐ We have fastened the rollable furniture.
- ☐ We have defined the secude places of our house.
- ☐ We have decided how to meet again.
- ☐ We have learned not to use any matches or lighters that might cause a fire until it is certain that there is no gas leak after a disaster.
- ☐ We have learned that we should use our phones only for emergencies and radios and TVs to get information.
- ☐ We have completed this plan in ..... and we have decided to go over our plan in every six months.

112 Emergency (Ambulance)
110 Fire brigade
155 Police
177 Forest Fire
156 Gendarmerie
184 Health Consultation
114 Poison Consultation
187 Natural Gas
158 Coast guard

Plan and get ready!

Fill in this Family Disaster Plan with your family.

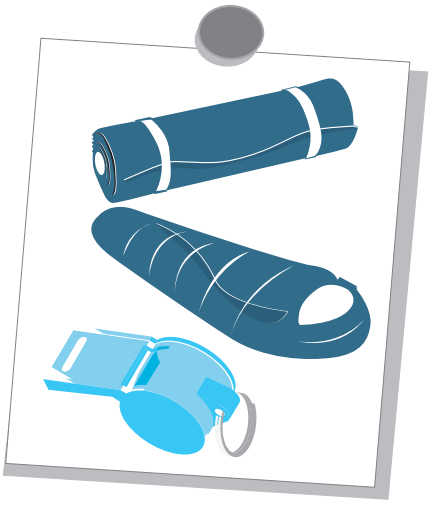
Put one of its copies into your bag and the bags of each family member.
And also, hang one of the copies to a visible place at your home.

Figure 2.5: When you finish practicing these steps about Family Disaster Preparedness Plan on the list below with your family, put a cross to the "Done" box and write the date action completed to the final column. When you have finished with this table, fill in the family emergency card that is given as a sample below and copy them for the each family member and always carry with you.

Besides, a disaster and emergency kit should be prepared by collecting necessary key items that family members might need in a disaster.

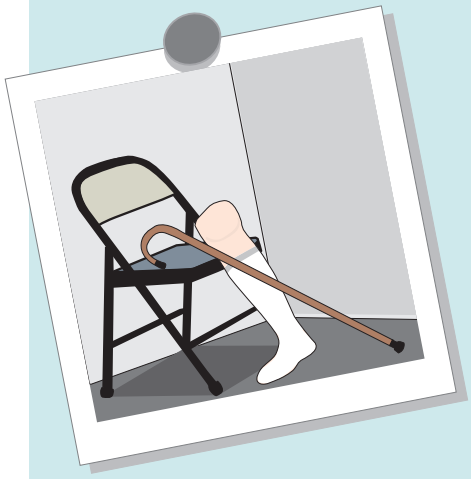
These items can be put in a disaster and emergency kit:

- Pocket knife, whistle
- Cash
- Pen, paper
- Blanket or sleeping bag
- Scissors, box tape, plastic/nylon cover
- Battery-operated radio, hand lamp, extra battery
- Personal first aid kit and medicines with extra and prescription that you essentially use
- Protective outfit, sturdy shoes and raincoat
- Special items for babies, old or disabled people if there is



- Identity card, family records, documents of house, car, and bank, social insurance and medical documents, etc. and copies for similardocuments and current photos of family members (in a water proof bag)
- If your family has an car, its spare key
- Enough water and food
- Hygiene packet (soap, disinfectant gel, tooth brush and tooth paste, wet tissue-paper, toilet paper, etc.)

Materially and morally valuable documents to be firstly rescued can be put into disaster kit as well. You can prepare similar kits for your car (if any) and working place. All family members should know where the disaster kit is. Materials given above are examples. A person can add materials to this list according to his/her personal situation and needs.



FIRE AND HAZARDOUS MATERIALS

Fire is a risk that would start suddenly itself or as a secondary hazard after a disaster (earthquake). In daily life there are many fire outbreaks due to various reasons that cause loss of life and property as well. However the mission of Local Disaster Volunteers does not include fire fighting directly, both the high fire risk in daily life and its presence as a secondary risk factor during rescue works require LCD teams to have basic fire knowledge and basic skills of fire extinguishing. It should not be forgotten that fire is a quite different hazard from wreckage. Since LDVs do not have fire fighting equipments they should know their limits regarding fires very well and should not lead to any situation that would risk their lives. LDV teams should have the knowledge of;

- "Precautions to be taken against fires" and
- "Things to do in case of a fire"

Fire Knowledge

Burning is a chemical event that happens as a result of the reaction of a material to oxygen through heat. For burning there are three conditions that should be together. These are a combustible material, heat and oxygen.

When we try to define fire after this short explanation "FIRE" is the uncontrollable burning event that breaks out due to the flames started for use. We should consider the combustible material, oxygen and heat (fire triangle) together in order to determine whether a situation has fire risk or not. (Figure 3.1) If one of these elements is eliminated a fire would not start.

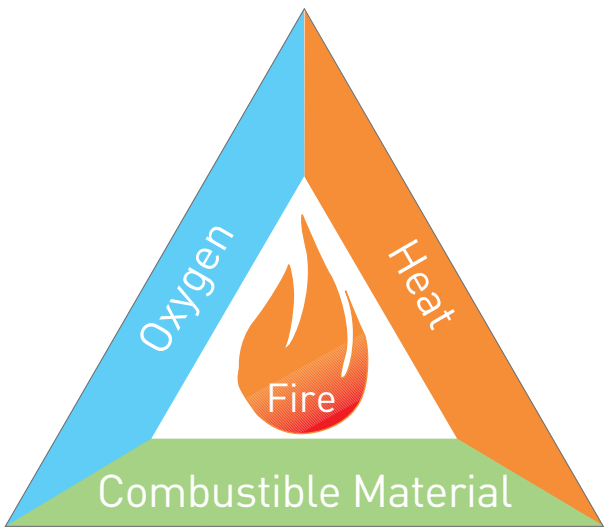


Figure 3.1: Fire triangle.

If one of the elements that causes fire is lack or not available in sufficient amount a FIRE WOULD NOT START.

Oxygen which is one of the three conditions of a fire exists in air (in the atmosphere 20%). Apart from special conditions there would be little control on oxygen source. Fuel and heat source elements would be taken under control much more easily. If heat and fuel are separated the situation would be much safer.

Fire Types and Classification

As result of the studies on gathering fires under different groups the most appropriate classification is made according to the types of combustible materials. This classification is defined within these four main groups below:

- **Class A fires:** Fires caused by solid combustible substances like wood, timber, raw materials, finished textile materials and paper. They are the fires with flames and glows. A grey smoke is observed in these fires.

- **Class B fires:** Fires caused by flammable liquids like kerosene, fuel, diesel, thinner, varnish and paints. They are flash fires. A black smoke is observed in these fires.

- **Class C fires:** Fires caused by flammable gases like liquid petroleum gas (gas tube), gas, and hydrojen.They are flash fires. Gas fires have no smoke.

- **Class D fires:** Metal fires caused by aluminium and magnesium. Generally it must be careful about when they are the materials react to water.

IN ANY TYPE OF FIRE
LDVs should only response to the fires at the beginning with the trainings they received. The progressed fires can only be extinguished by fire services that have necessary kits and equipments.

The Sources Used in Fire Extinguishing

As it is mentioned above when any one of fuel, heat or oxygen elements that cause burning are removed a fire would not start. On this basis many sources would be suitable in fire extinguishing. Examples are given to these sources below:

Portable fire extinguishers: they are very important equipments used in extinguishing small scale fires.
Indoor water hoses: Hoses that are generally 30 m long with a special assembly used in commercial buildings and houses.
Repression/Closure: It is vital to repress the fire by closing the doors indoors. Close the doors that open to inner rooms and corridors while leaving the place during a fire in order to prevent the spread of fire.
"Creative" resources: In some conditions some materials around the place would have vital importance to extinguish fires. For instance; solid wastes, sand, garden hoses, stairs, shovels and pools are important sources that can be used during fire extinguishing.

Fire Extinguishing Devices

Fire extinguishers should be kept in working places and houses, as well. Their periodic maintenance should be provided and how to use them should be learned. Portable fire extinguishing devices must be evaluated and approved by authorized institutions and organizations. These devices must be evaluated according to the fire type, its influence and capacity. Components of a portable fire extinguisher are shown in Figure 3.2:

1. Nozzle: The mechanism that enables to spray the substance in the tube.
2. Pressure gauge: it shows whether there is enough pressure in fire extinguisher or not.
3. Safety pin: It prevents the nozzle to work accidentally. It should be pulled off before using the fire extinguisher.
4. Hose: It should be flexible, qualified and easy to use. It should be aimed at the base of fire.
5. Label: It has the type of fire and the usage information on it. Besides, the periodic control of tube is written on this part.
6. Date Label: It shows the expiration date of extinguisher.

Figure 3.2: Components of a fire extinguisher.

Fire Extinguishers Types

It is important to use the proper extinguishers according to the fire type (Figure 3.3). Otherwise there would be some negative consequences. There are mainly five types of fire extinguishers:

Water extinguisher: Water is the most common extinguishing substance. And it is important in extinguishing by cooling as well. It is used in Class A fires. But still there are risks of water use; electricity is the primary one of them. If there is electrical hazard, water should not be used. Since it would cause the spread of fire, water should not be used in liquid fires as well. In chemical fires that would react to water, water extinguishers should not be preferred.

Dry chemical extinguishers: the extinguishing principle of dry chemical powders depends on both smothering and ending the chemical reaction. There are dry chemical powders to use in class B and C fires or for the whole A, B and C class fires. DCPs (Dry chemical powders) can also be used in fires resulted from electricity. The use of portable extinguisher with DCPs is very common.

Carbondioxide fire extinguishers: They are used in class B and C fires. The extinguishing principle of carbon dioxide is to smother. They can be used in response to electrical fires as well. There would be no extra damage during the extinguishing phase.

Foam fire extinguishers: It is a material made up of water and foam mixed in certain proportion. The extinguishing principle of foam depends on both smothering and cooling. It is generally used in class B fires. Since it is water based material the risk of any reaction between electricity and the combustible material should be paid attention.

Halon fire extinguishers: Chemical reaction extinguishes the fire fast and effectively by ending the chain of fire. These clean gas extinguishers are generally used in class B and C fires.

Extinguishing a Fire

In normal conditions responsing fires is the task of fire fighting departments. The task of LDVs during a fire is to take environmental precautions and gathering information about the event without putting themselves at risk. In that way they can direct the fire teams correctly and help them to keep the fire under control. After the arrival of professional teams, LDVs support the fire teams under the command of fire marshal.

FIRE TYPE	EXTINGUSHING	
	CONSTITUENT	METHOD
ORDINARY COMBUSTIBLES  	WATER FOAM	REDUCES HEAT STOPS AIRFLOW-REDUCES HEAT
	DRY CHEMICAL	ENDS THE CHAIN REACTION
FLAMMABLE LIQUIDS  	FOAM CO_2	STOPS AIRFLOW
	DRY CHEMICAL HALON	ENDS THE CHAIN REACTION
FLAMMABLE GASES  	CO_2	STOPS AIRFLOW
	DRY CHEMICAL HALON	ENDS THE CHAIN REACTION
COMBUSTIBLE METALS  	SPECIAL ELEMENTS	GENERALLY STOPS AIRFLOW

Figure 3.3: The table illustrating the relation between fire types and fire extinguishers.

Fire is different from rescue events. Standard LDV equipments are not appropriate for fire response. And since LDV teams are not trained about fire fighting they should not response to fires. But still each fire has a starting point. At this point the fire has not spreaded yet. Especially responding possible beginning level fires after a disaster has vital importance. In addition to this there would be more fires than fire teams could response or fire brigade trucks would not arrive to the fire scene due to the unfavourable transportation conditions. Therefore LDVs should have the necessary information and skills to response beginning level fires.

These should be done in case of a fire:

- Inform everyone about the hazard: Warn the people around by shouting or using a fire alarm.
- Inform the fire brigade: after warning the people under risk inform the fire brigade immediately (110).
- Decide whether you are going to response the fire or not: At this point LDVs have to analyse the fire, their capacity and the situation. Since LDVs do not have professional fire equipments and training they must plan how to response the fire without risking their lives according to the points below. As an LDV, evaluate the factors below while responding fires (Figure 3.4):

- Phase of the fire: if it is not the beginning phase, never response.
- The smoke around: if there is much smoke around you evaluate the place immediately because it would have toxic gases.
- Extinguishing knowledge and skill: If you do not have the knowledge or the skill to extinguish the fire do not response it.
- Co-work: if you do not have a co-worker never response the fire on your own.
- Suitable extinguishing material: If you do not have the right extinguishing material do not response the fire.
- Self confidence: if you have any doubt about extinguishing fire do not response and leave the place.

It must be decided whether to response the fire or not in the light of the information above. If the decision is not to response the fire must be insulated. Apply the things below to insulate the fire:

- Close all the windows that are close to fire safely.
- Close all the doors that are close to fire safely and block up the doors with wet rags.
- Close all the doors opening to fire on your evacuation way.
- While evacuating the place and providing the insulation of fire make sure that there is nobody inside.
- If you know, turn off the electricity, gas and water valves during evacuation.
- Meet the fire brigade trucks.

Figure 3.4: The steps to pay attention while deciding extinguishing a fire.

The use of a fire extinguisher: If there is a small scale fire and a handy fire extinguisher try to extinguish the fire by applying the steps of "P.A.S.S" (Figure 3.5).

P.A.S.S.

1. **Pull:** Pull off the metal pin on the fire extinguisher
2. **Aim:** Aim the hose nozzle at the source of fire.
3. **Squeeze:** Squeeze it from a distance by facing the fire in the direction of wind.
4. **Sweep:** Sweep back and through until the flames appear to be out.

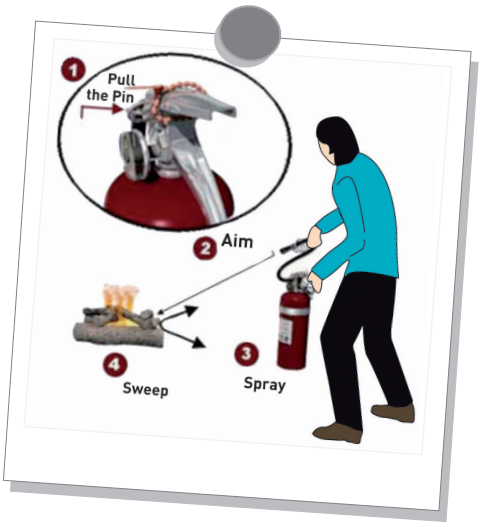


Figure 3.5: The use of a fire extinguisher.

There are some points to be careful about. One of them is to hold the fire extinguishers upright while using. And the other important point is to refill the once squeezed extinguisher even though it is not totally empty.

When you are exposed to heavy smoke while responding fires in closed areas you should stay close to the ground. Because toxic gases and heat gathers up in the air. In such cases mouth and nose must be covered with a wet or dry rag and the place must be evacuated immediately. Therefore a smoky place must be evacuated by crawling, or if there is much smoke and heat by creeping. In a smoky place the visual range would decrease. In this condition the risk of getting lost would be minimized by touching the wall with the surface of your hand all the time. The touch with the wall should be made with the surface of the hand not with the palm since the surface of your hand would show a repulsive reflex when confronted with a hazard like electricity or high temperature in that way it prevents any injuries. But the palm of your hand would show a grasping reflex in such events and would cause long term injuries.

The points to pay attention while using a fire extinguisher are shown in Figure 3.6.

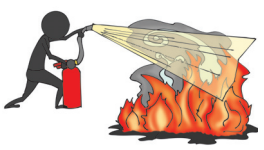
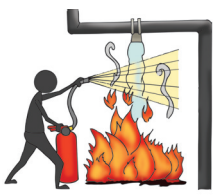
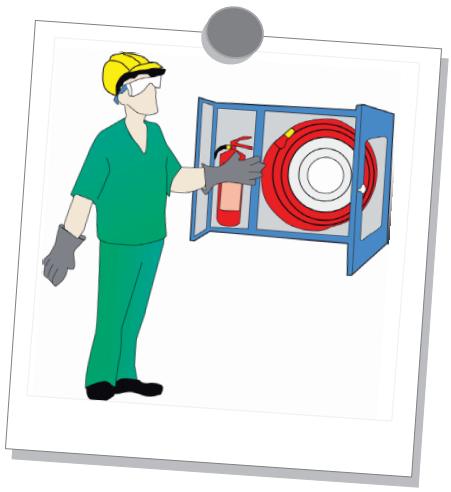
True	Explanation	False
	Approach fire over the wind.	
	Aim the lance at the source of fire.	
	If there is a fuel leakage start extinguishing from the point feeding the fire.	
	Do co-work.	
	Cool it when the fire burns out.	
	Refill the empty extinguisher tubes.	

Figure 3.6: The points to pay attention while using a fire extinguisher.

Fire Extinguishing Safety

As in all emergency situations safety has vital importance in fire fighting as well. LDV teams should not try to extinguish a big fire and should pay attention to the topics below in fire fighting:

- Safety equipments must be used (Helmet, glasses, dust mask, gloves for all weather conditions, boots)
- It must be a co-work and there must be an extra team if it is possible.
- An alternative way must be decided to leave the fire scene.
- It must be very careful while approaching and entering the areas filled with smoke. If the right equipments are not provided then these places should not be entered.
- The closed doors must be checked with the back of your hand and if the door is hot the risk of a fire must be considered.
- You must stay close to the ground.



Electricity and fire

Although electricity is generally considered as a different class of fire it is not a class but a source of fire. Some simple safety precautions must be paid attention while responding fires resulting from electricity.

The first thing to extinguish electrical fires is to turn off the power source. Without turning it off no response activities should be done. In no way an electrical cable must be extinguished with water. A fire response without deactivating electricity would increase the risk of a person to get electric shock. After deactivating electricity the fire would be extinguished easily with a portable fire extinguisher.

Frier fire

If the LDV team realizes the burning of the oil in a small frying pan they should not panic. They should extinguish the fire with a fire tube –if there is any- or apply the things below. The fire team must be informed before starting response activities.

- A piece of rag or towel big enough to cover the pan is wetted.
- Approach the burning pan by staying close to ground (crouching down).
- The wet rag is put on fire by covering the surface of the pan.
- No air passing into the oil in the pan.

- The rag is held on the pan until the pan and the oil get cool.
- Toxic gases and heat are evacuated by letting some fresh air into the place.

The things NEVER to do in this case are these:

- No water must be poured into the pan.
- The burning pan must not thrown into sink.
- The burning pan must not be thrown out of the window.

Response to domestic gas tube fires

Domestic gas tubes are used to start up cookers, catalytic stoves and water heaters. Tube fires are gas fires. They start when the butane gas catch fire from the cylinder valve. These are class C fires. So the flammable material (gas) must be cut off in order to extinguish them. It has two ways. The burning up the gas in tube or the turning off the cylinder valve. Generally the turning off the gas cylinder valve carefully is enough for extinguishing these types of fires. But the position of the gas tube in the house might prevent turning off the valve. In that case following a proper method by taking into consideration the place of the tube has vital importance.

The most important topic before applying these methods is safety. If there is a lack within the safety procedures mentioned below the fire should not be responded. Fire teams must be informed before responding the fire.

Response to domestic gas tube fires with portable fire extinguishers

Portable fire extinguishers can be used in responding domestic tube fires as an example to class C fires. But it must be careful about when using these types of fire extinguishers in responding tube fires.

- First of all the extinguisher used must be suitable for class C (gas) fires.
- The flame of the gas tube would spurt over with the gas pressure. Therefore you should not response it directly.
- Extinguisher must be aimed at the base of fire. The gas would catch on fire from the valve or from a leak in the connection pipe as well.
- Spread of these fires must be prevented.
- The valve of the tube must be turned off just after extinguishing the fire.
- The gas and heat are evacuated by letting some fresh air into the place.

Response to domestic gas tube fires when there is no portable fire extinguisher

If there is not any portable extinguisher a gas tube fire might be extinguished with a wet

blanket or sheet. This technique must be applied with a proper method. Especially in this technique the position of gas tube is very important. If the situation is not appropriate to response than professional teams must be waited.

- A blanket or sheet that is wide enough to cover the tube at least a full and a half turn is damped.
- It is approached from the opposite direction to where the flames go out. If it is not possible then this technique should not be applied and fire teams should be waited.
- The wet sheet or blanket must be hold as a barrier between the gas tube and LDV.
- Then the parts of the sheet must be covered around the flame by closing the exit point.
- After covering gas tube the valve must be turned off over the sheet.
- The cooling off gas tube must be waited.

Things to be careful about in domestic gas tube fires

Since gas tubes contain compressed and combustible gases they must be treated very carefully. The risk of explosion is the biggest hazard about gas tubes. But a conscious person would realise this risk.

- If the gas tube has been burning for a long time and is very hot
- If the gas tube is not in flames but exposed to external high temperature for a long time
- If the shape of gas tube is deformed
- If there is suspicion about whether the gas tube is in accordance with TSI standards, it should not be extinguished and the place must be evacuated immediately. Professional teams must be waited and they must be informed about existing hazards.

Fire Risks and Risk Mitigation

The main function of LDVs about fires must be to take fire safety precautions of themselves and their surrounding. When the fire is thought as a big risk, it becomes important to prevent the starting of a fire rather than extinguishing it. When the majority of fires are thought to happen due to carelessness and lack of attention, the importance of LDVs' awareness and their informing the people around them would be clear.

Just like all hazards once the fire is out of control fighting with it gets harder. A fire that might be prevented with some simple precautions beforehand would lead great damages even at the starting point and the extinguishing activities would cause extra damages as well.

Therefore deactivating infrastructure systems like gas, water and electricity has vital importance in terms of preventing the spread of floods, fires and explosions to the surrounding. For instance in the earthquake happened in Kobe, Japan on 17 January 1995 with 7,2 magnitude the small kitchen fires have spread over the city and lead to bigger fires. So not to confront with a similar situation in our cities special attention should be paid on infrastructure systems.

Some simple fire precautions taken before and after disasters have an important role in mitigating fire risk. First of all learning and defining the places of potential sources that might lead a fire is an important factor of fire risk mitigation. These sources may include electricity, natural gas and flammable liquids. For instance precautions like installing a smoke detector, providing fire extinguisher devices at homes, schools and working places, not plugging various electrical devices into one socket, turning off the devices like water heaters etc. are vital for fire prevention.

Electrical Hazards

Electrical wiring has vital importance for fire safety. Therefore it is required to be made with high quality. Improper or substandard wirings would increase the risk of fire. There must be no overload within power lines and substations. Damaged electric cables, sockets or plugs should not be used and they must be changed with new ones in accordance with TSI standards. And avoiding from using "octopus" cables that might cause overload on electrical wiring in other words not plugging multiple electrical devices into one socket is required. Electric fuses must be new types. The cables should not pass under carpets, the electrical devices and cables should be prevented from getting dusty. The points below should be paid attention to mitigate electrical risks:

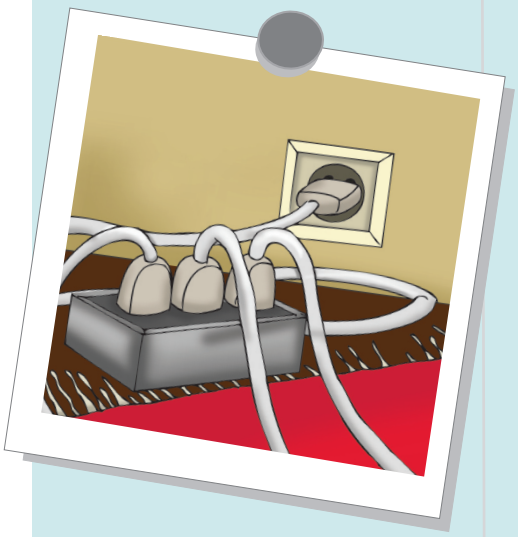


Figure 3.7: An illustration from "Electrical octopus".

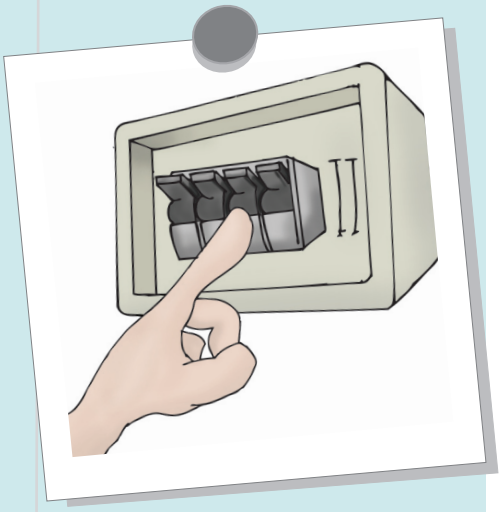


Figure 3.8: Learn how to cut off power and the places of breakers.

- Avoid from "Electrical octopus", remove the disordered cables and do not overload the power sockets (Figure 3.7).
- Do not pass electric cables under carpets.
- Change the faulty or worn-out cables.
- Keep electrical devices properly. Replace or change the faulty devices.

When an emergency situation happens regarding electricity get ready to response an electrical device fire. Learn how to cut off power, the places of breakers and fuse box and how to turn off electricity beforehand (Figure 3.8). For circuit boxes first of all turn off the small disconnecting switches and then the main breaker.

For fuse boxes, loose the single breakers and then take out the switch.

ATTENTION! Do not enter a basement or room under water to turn off the electrical supply circuit!

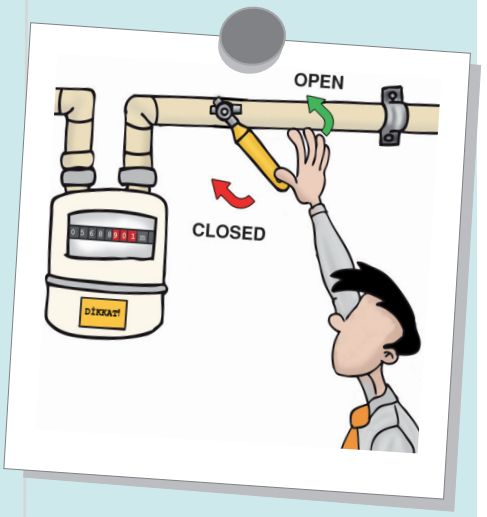


Figure 3.9: The illustration of on/off position of natural gas installation.

Natural Gas Hazards

Natural gas installation is important in terms of fires as well. First of all gas installation components must be in accordance with TSI standards. There must be safety valves that enable automatic shutoff in gas ovens when the power is cut off or there is temperature rise. Similar systems must be installed to water heaters and combi boilers as well. Natural gas pipes in walls must be installed properly to prevent them breaking during an earthquake. Similarly, the main valves outside the buildings must have automatic shutoff systems after an earthquake. An LDV team must pay attention to the subjects below:

- Do not switch on/off.
- Do not turn on/off breakers, switch, interrupter and electrical devices.
- Do not use electric bells.
- Do not light matches or lighter.

- Start airing the place from where you smell gas.
- Turn off the inlet valve of your counter (Figure 3.9). (Natural gas valve is "open" when it is in the same direction with installation pipe and it is "close" when it makes a 90 degree angle to installation pipe.)
- Call İGDAŞ NATURAL GAS EMERGENCY (187) that gives 24 hours unlimited service if possible.
- When you call "187 Natural gas emergency" or reach the authorities give your installation number if you know or say your address correctly.

Liquid – Solid Substance Hazards

Flammable liquids like oil or oil products, coal lighter and thinner are liable to lead secondary risks after an earthquake. To be acquainted with these types of materials is important to minimize the hazards related to flammable substances. So read the inscriptions carefully.

Corrosive, poisonous and similar chemical substances are shortly named as "hazmats". The stores, laboratories and similar places where hazmat materials are kept create a risk factor in case of a disaster or even by themselves. It must be careful about keeping these materials in safe places avoid from cold or high temperatures. It must be defined whether they are stored on the floor or on the shelves to avoid spilling. The cabinet doors of these materials must be fastened with latches.

Explosion or inflaming of kitchen or industrial gas tubes are among the most common hazards confronted in our society. Gas poisonings and gas compressions must be taken into consideration as well. Therefore it is important to keep alarm detectors and aspiration in the places where gas tubes and natural gas are being used.

Hazardous material accidents (related to transportation)

may also affect you. The possible material risks (chemical spills and fall outs, pollution) caused by such accidents must be defined and armouries and ammunition depots near by along with arsenals must be taken into consideration as potential risks as well.

What should be careful about solid-liquid materials?

All toxic, flammable and hazardous materials must be kept in sturdy boxes according to the rule of "restrict, isolate, eliminate, separate" (SİYA) to prevent them falling out during an earthquake.

- Store in small numbers.
- Keep in sturdy and nonabrasive cases.
- Separate them from each other.
- Exterminate the unnecessary ones.

Response to hazardous materials in a disaster: it is important to know the identification symbols of these hazards that might happen in a disaster. For instance when you see hazardous materials in a tanker accident or around wreckage;

- Immediately mark the place and keep everyone away there.
- Provide enough safety zone.
- Inform the officials.

Other Topics for Fire Prevention

Less furniture: The fire would spread faster when there is more furniture. Keeping less flammable objects in our houses would minimize the risk of fire spread. Besides that decorative objects must be placed properly to prevent the spread of fire and they must be made up of non-flammable materials. Keeping our houses clean is also important because flames may easily spread on fluffs. And unnecessary objects mean more fire risk furniture in our houses.

Chimneys: Placing stoves close to chimney outlets, cleaning them every year and providing fire resistant covers may prevent the fire risks resulting from chimney fires (For instance plastic covers should not be used).

Fire detection and alarm systems: Fire alarm system is a complete system including fire detection, alarming, control and communication functions. If the fire alarm system is deactivated for some reasons, the unprotected area is controlled by extra security personnel and necessary precautions are taken until the system is reactivated. Fire detection and alarm systems are required to be activated manually automatically or

with the warnings of an extinguishing system.

Smoke control systems: The air conditioning, pressurizing and smoke evacuation systems in a building must be designed installed and work to provide the safe evacuation of the building without leading any panic among people.

Fire extinguisher: There must be a 6 kg A-B-C class portable fire extinguisher in each house. Members of the house must learn to use this extinguisher. The extinguisher must be placed away from fire risk in an easily accessible place for everyone. The base of fire extinguisher should not touch the ground and it should be fastened to wall 90 cm above the ground. Extinguishers should be refilled each year but before that a fire extinguishing exercise would be useful.

Children: Special precautions must be taken for children about fires. Flames have been attractive for children all the time. Therefore devices like cookers, lights, matches which are source of fire along with gas valves and electrical fuses should be kept away from children's reach. If there are fire trainings for children within the institutions in your area, attendance of the children should be provided.

Basic fire awareness training: Trainings from relevant institutions in order to raise the fire awareness must be received and they must be repeated regularly.

Evacuation ways: Each building that is designed for human use is provided with necessary evacuation ways for quick evacuation in case of a fire or other emergency situations. Evacuation ways and other precautions are not decided according to a single measure of life safety during fires or other emergency situations.

In each building there are escape ways in proper type, number, position and capacity appropriate for the class, load, fire safety capacity, structure and height of the building enabling suitable escape.

Each exit should be seen easily and the way leading to exit should be visible. The ways not leading to exit are signed or designed in a way not to confuse with real exit. Necessary precautions are taken to prevent people from leading blind areas and to help them reaching exit/exits directly without passing from used rooms/places during a fire or any other emergency situation. A real escape way is the complete and unblocked way that starts from any point in a building and continues to the street. As a whole escape ways include:

a) Exits from rooms and other separate places
b) Halls and similar hallways at each floor
c) Stairs that reach the ground floor
d) The ways close to stairs at the ground floor and leading last exist at the same floor
e) Last exist

Elevators can not be accepted as escape ways.

Escape stairs: They are specially designed and conservative stairs that are used for quick and safe evacuation of people in a building in case of fires and other emergency situations. The ordinary stairs of the building that are resistant to fires might be accepted as escape stairs as well. No flammable substance might be used in the walls, bases and roofs of stairs. And these stairs are separated from other parts with minimum 120 minutes fire resistant walls and a minimum 90 minutes fire resistant smoke proof door. Building manager is responsible for the fire stairs to be ready to use any time.

Hazardous Materials

Today one of the dangers that might appear in our houses, industrial environment, education, sales and storage facilities and affect large masses is **CBRN (CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR)** hazards. These hazards especially when appear during a disaster spread the environment uncontrollably. It gets harder to realize the danger with our five senses under this condition; disaster victims, environment and the people around are affected from this situation. The materials that are;

- Poisonous
- Easily flammable
- Explosive
- Corrosive
- Oxidizer
- Easily reacting to water
- Radioactive
- Electromagnetic are classified as “hazardous materials”.

Hazardous materials are always potential risks. They are stored everywhere and transported with various vehicles. They are kept in industrial and commercial areas, freeways, harbours, airports and railways along with homes and working places. After earthquakes hazardous

materials may cause secondary hazards. Therefore it is important for LDVs to know hazardous materials.

Classification of Hazardous Materials

Hazardous materials are generally classified with diamond shaped warning symbols by US department of transportation, United Nations or North America. Generally we can divide hazardous materials according to these symbols into 8 classes.

Class 1: Explosives
Class 2: Compressed gases
Class 3: Flammable liquids
Class 4: Flammable Solid
Class 5: Oxidizer
Class 6: Poison and Infectious Substances
Class 7: Radioactive
Class 8: Corrosive
Class 9: Miscellaneous

Each diamond shaped label that symbolises hazardous materials contains a colour, symbol, name and number that illustrate the hazard type.

Explosive (E): They are the chemicals that have exothermic reaction. They can explode when keep close to fire.
Precaution: They must be kept away from fire, heat, pressure and friction.

Oxidizer (O): Organic peroxides are oxidizer materials that are explosive even though they do not touch any flammable substance. And other oxidizers can catch on fire in contact with oxygen even though they are not flammable themselves.
Precaution: Must be kept away from flammable substances. It is difficult to response these types of materials once they catch on fire.

Highly Flammable (F): the liquids that have a flash point 21 ºC below are not easily flammable. Solid materials and mixture that are unprotected in the source of fire are easily flammable.
Precaution: They must be kept away from fire, sparkles or heat source.

Extremely Flammable (F+): Liquids that have a flash point 0 ºC below and a boiling point max. at 35 ºC. They are the gases and gas mixtures that are flammable in normal pressure and average temperature.

Precaution: They must be kept away from fire, sparkles or heat source.

Toxic (T): They are liable to cause death or serious injury to human health if inhaled, swallowed or by skin absorption
Precaution: The contact with human body must be prevented and medical care must be provided in case of any absorption.

Very toxic (T+): They are liable to cause death or serious injury to human health if inhaled, swallowed or by skin absorption
Precaution: The contact with human body must be prevented and medical care must be provided in case of any absorption.

Harmful (Xn): May cause damage to health when inhaled, swallowed or absorbed by skin.
Precaution: The contact with human body must be prevented.

Irritant (Xi): Although they are not corrosive, they may cause inflammation to the skin through immediate or prolonged contact.
Precaution: Eye and skin contact must be prevented

Corrosive (C): They may destroy the living tissue
Precaution: Special precaution should be taken to protect eyes, skin and clothes, the vapour should not be inhaled, medical care should be provided in case of any contact.

Dangerous for the environment (N): May present an immediate or delayed danger to ecological system.
Precaution: The contact of these substances with soil and environment must be prevented by taking into account the possible risks.

IV. STRUCTURE INFORMATION AND STRUCTURAL DAMAGE ASSESSMENT

Structure Information

Structure can be explained as an engineering product that is designed to resist all kind of loads by special material used in special type of structure system for a special use. Structures are classified according to their features in different ways. For instance, we can classify structures according to their materials as it follows (Figure 4.1):

Reinforced concrete structure: it is the structure type that the load bearing elements are reinforced with reinforcing rod. Concrete reinforces the pressure strength whereas reinforcing rod provides the same for shears and tension strength. The flexibility of the concrete is balanced with ductility of iron. When built properly, it is mainly earthquake resilient. It is the most common type of building in our country (Figure 4.1-a).

Masonry building: Walls are the load bearing systems of these types of buildings. Stone, brick and adobe are used as structural materials. It might collapse easily during an earthquake. It takes the second place after reinforced concrete buildings in our country (Figure 4.1-b).

Steel building: steel material is used nearly for the whole structural system. It is the system mainly applied in industrial areas, factories and big workshops in our country (Figure 4.1-c).

Wooden building: wooden material is used for almost the whole structural system. It is commonly seen in rural areas where the forests are common(Figure 4.1-d).

Structural Elements and Their Features

To achieve building purpose of a structure, firstly it must have sufficient strength. This strength is constituted from load carrying system. A load carrying system is comprised of all the elements that resists to loads. All of the elements in this system is called load carrier and other elements instead of load carriers are called non-structural elements

Figure 4.1: Classification of structures according to their materials:
a) Reinforced concrete b) Masonry
c) Steel d) Wooden

this differentiation is up to civil engineer and his/her design.

In reinforced concrete structures, columns, shear wall and foundation are elements of load carrying system. In masonry buildings "infill walls" are accepted as structural elements. They vary according to the material they are made. But the "brick walls" (partition walls) that provide isolation and the "floor" we walk on are "non load bearing" in other words "nonstructural" elements.

Load carrying elements and systems of structures: According to structure, load carrying systems in a building are composed of column, shear wall, beam and foundation masonry walls. Column, shear wall and masonry walls are the vertical elements whereas beams are the horizontal elements in a building. It is used together to make a load carrying system (Figure 4.2).

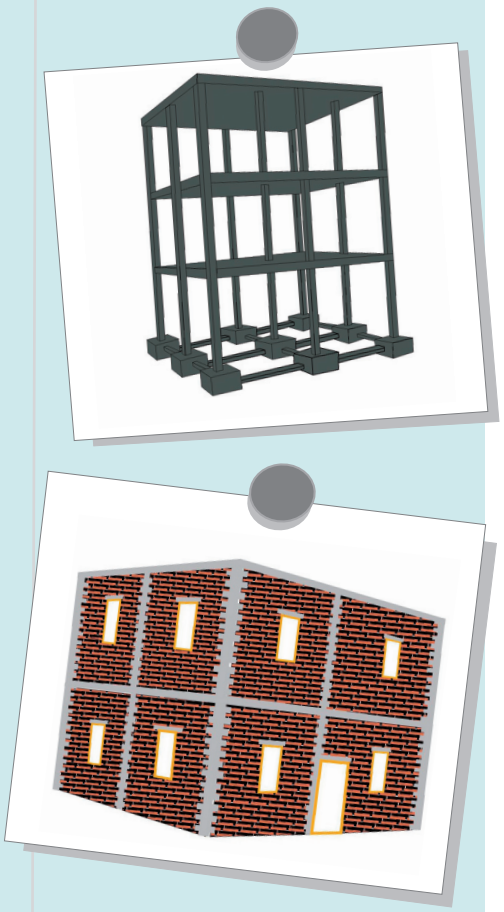


Figure 4.2: Load carrying systems of buildings; Frame and mixed systems.

Frame system: Load carrying elements are column and beams which are used in mid and low rise buildings.
Shear Wall System: Load carrying elements are only shear walls which are used in high rise buildings.
Shear Wall-Frame System: Load carrying elements are comprised of column, beam and shear walls which are used in high rise buildings.
Masonry System: Load carrying elements are only masonry walls which are used in low rise buildings.
Mixed System: Load carrying elements are masonry walls and wood elements which are used in mid and low rise buildings together.

Loads acting on building and load transferring system: Loads acting on buildings can be classified in two groups with respect to load acting direction and be classified three groups according to the load acting type. According

to load acting direction, loads can be in horizontal or vertical direction. Vertical loads are in gravitational direction. Horizontal loads are perpendicular to vertical loads. According to the load acting type, loads are separated as dead loads, live loads and external loads (Figure 4.3).

Dead loads are the weights of load carrying elements of a structure itself according to usage purpose, such as self weight of columns, beams, shear walls, and masonry walls. Live loads are the loads that can be changed according to usage of a building in different times in a lifetime of a structure in different magnitude. For instance, people are working in a building only in work hours. External loads are the loads which frequency and magnitude of loads change according to structure location. Wind and earthquake loads are the representative of external loads that are acting horizontally.

In the designing process of the buildings the effects of both vertical and horizontal forces mentioned above are taken into consideration and calculations are made according to this. The system established with load bearing elements to provide proper reinforcement is called as "load transferring system" (Figure 4.4).

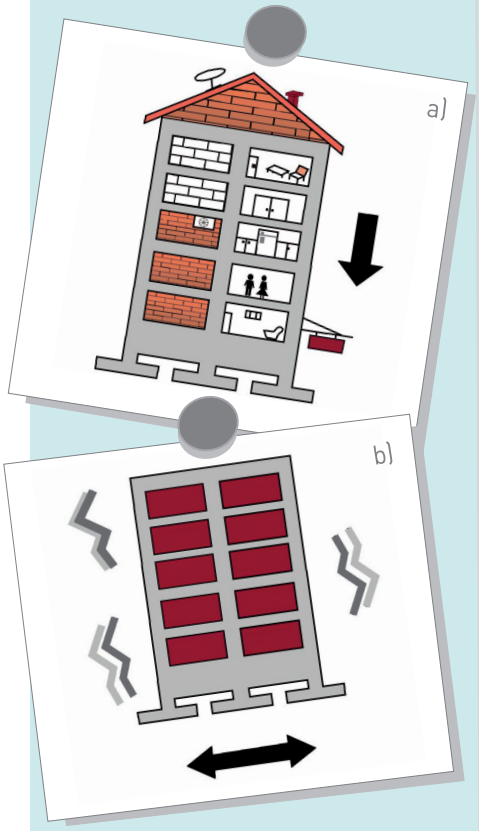


Figure 4.3: a)Horizontal and b)vertical loads acting on structures.

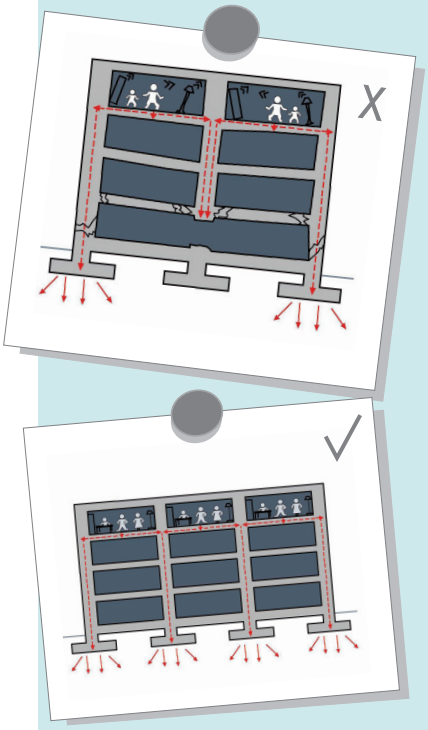


Figure 4.4: Load carrying system of a building.

Reinforced Concrete Structures

The Turkish building stock is mainly composed of reinforced concrete structures. Reinforced concrete elements are maden by placing rebars into concrete.

Elements and functions of reinforced concrete buildings: Elements of reinforced concrete buildings can be separated into two as load carrying element and elements that are carried. Columns, beams, shear walls and foundations constitute load carrying elements whereas floors, walls and roofs constitute elements that are carried by load carrying elements (Table 4.1).

Table 4.1: Elements in a reinforced concrete structure and their classification according to their impact direction.

	Load carrying elements	Non load carrying elements
Vertical	Columns Shear walls	Infill walls Partition walls Windows
Horizontal	Girders Floor Ceiling Foundation	Suspended ceiling roof
Joints	Column-Girder joints Girder-girder joints	Joints of columns or girders to the non load carrying infill walls

Load carrying elements and their features might be summarized as:

Columns are vertical elements and used in low and medium rise buildings with shear walls.

Shear walls are thin columns which has seven times greater length than width of it. They are used in structures in earthquake prone areas especially in high rise buildings.

Beams are horizontal elements which confine columns and shear walls to make the load carrying system well bounded.

Foundations are the elements which carry the loads of structure to the soil.

Other elements that compose a structure and their properties are as it follows:

Floors carry the loads that are in the structure such as people, furniture etc. and transfers it to the beams. It has small thickness compared to dimensions. In other words, the place that we walk on.

Infill walls separate the rooms according usage purpose and also have a role in

sound and heat isolation which are made of hollow bricks.

Roofs isolate buildings from rain, snow and heat in different material and in different geometric shapes.

Factors affecting earthquake performance of reinforced concrete structures: The main factors affecting earthquake performance of a building are:

Soil condition: Soil has a great importance due to being the first transferring point of earthquake waves and element of a structure that touches to the ground. Soil properties of a site are the key parameter to decide foundation type of a structure. Earthquake forces are felt as a fast shaking in hard soils while shaking is felt in longer intervals in soft soil.

Geometry of building: The geometry of a building in plan and in vertical axis is another key parameter of earthquake resistant design. Buildings that have L, T and H shape will have damage on the corner points the plan due to higher forces (Figure 4.5). Similarly unsymmetrical buildings put overload on load carrying system of the building.

Soft storey: Infill wall placement may constitute soft storey phenomena in earthquake behaviour of a building while it has no load carrying capacity. Soft storey occurs in discontinuity of infill walls in frames systems.

Short column affect: In design process, being some column heights is shorter is called short column. Them main reason for this is some of the columns are confined by different floor at different height of the column. The other reason is the infill walls that are up to different height of column. The short part of the column behaves

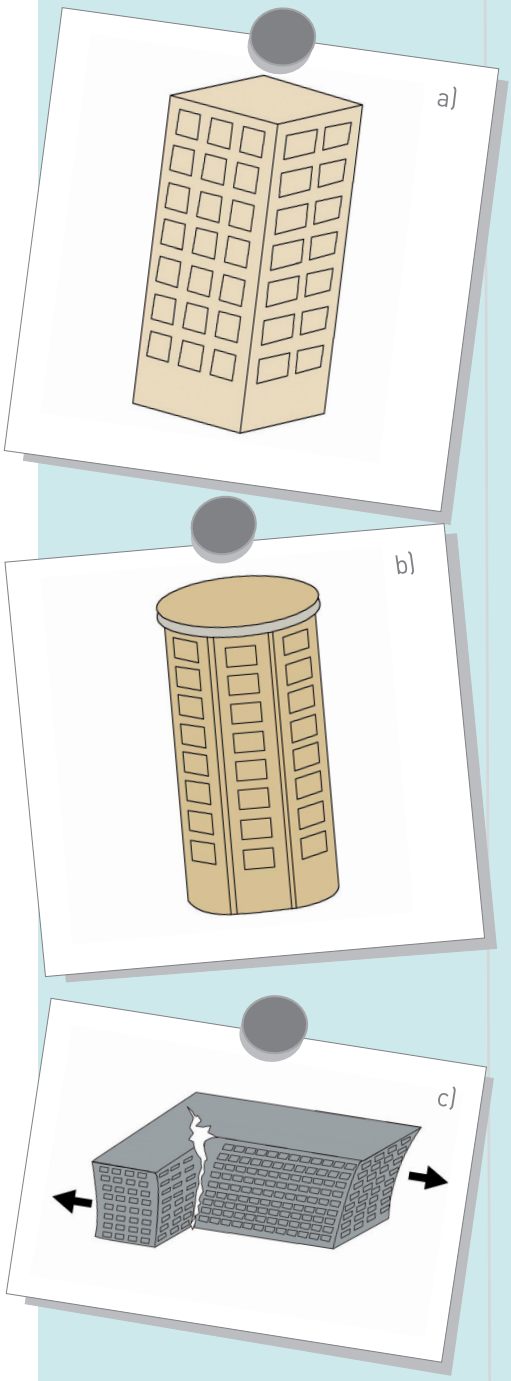
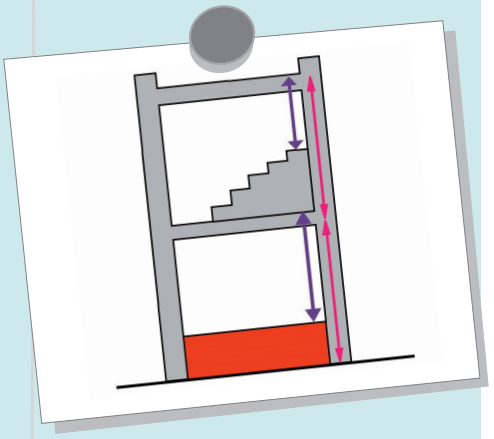
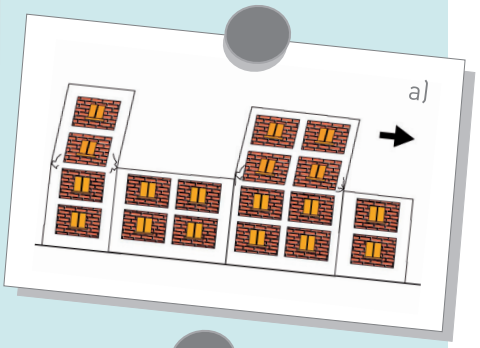


Figure 4.5: Buildings that have normal (a, b) and risky (c) geometry.



Figurel 4.6: Schematic view of short column.



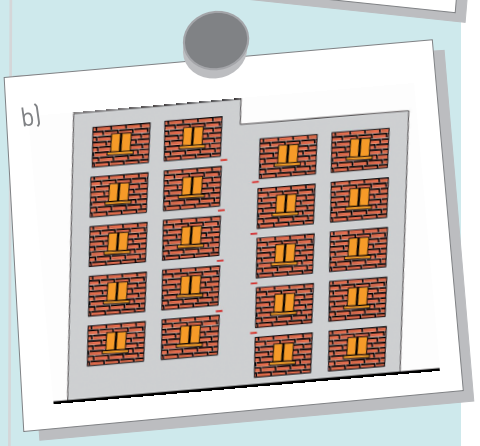


Figure 4.7: Similar (a) and different (b) floored adjacent buildings.

different than the other columns. Then more forces acting on short columns than its predicted and damage is likely to occur (Figure 4.6).

Adjacent Building: Not only have the properties of the building but also an adjacent building affected the earthquake behaviour of a building. When an earthquake strikes, all buildings sway according to its load carrying system, cross section of column and beam, position of structural elements on a plan (Figure 4.7).

Masonry Buildings

In Turkey, one of the buildings type widely used in rural areas is masonry buildings. Main element of load carrying system of masonry buildings is walls which are made of different materials. Type of material used often is concrete, bricks and stone. Earthquake performance of masonry building in past is not as good.

Members of masonry buildings and their functions: Noted above that, the infill walls are the main structural members of masonry structures. However, an element of called "girder" is also a member of load carrying system of masonry structures as the walls of the structure to ensure behave as a whole in an earthquake. Girders which usually made of reinforced concrete are built in vertical or horizontal. But, vertical girders do not have load carrying capacity like column and also horizontal girders do not have load carrying capacity like a beam. The main task of this element is to bind to each other the carrier walls in vertical and horizontal to provide integrity. The main factors affecting earthquake behavior of masonry building are as it follows (Figure 4.8):

- Placement of carrying walls and joints
- Space ratio in carrying walls
- Placement of girders

- Storey number

Basic Features of Earthquake Resilient Structures

Three basic principles for structures can be mentioned here. These are;

1) Continuity
2) Equal dispersion
3) Proper fastening

What is stressed with continuity principle here is the continuity of structural in other words load bearing system elements along the building from top to bottom and keeping the whole columns at the same level at the ground floors as well. Equal dispersion principle refers the symmetric placement of structural elements in the plan as much as possible. Proper fastening principle is providing the fastening of structural elements that are columns and girders in both direction and at least in two ways.

Things to pay attention of Masonry Buildings during Service:

- Keeping the geometry of the building as it is
- Keeping the structural elements as it is
- Keeping the purpose of use of the building same
- Not Adding extra heavy equipment, water storage and other tools
- Water insulation
- Maintenance of the building

Building Damage Assessment

Assessment and the classification of the damage are important in terms of searching. Therefore the classification of the building damage is required. The risk of an after shock for a damaged building must be considered and the search activities should not be started without a damage assessment. In some cases collapsed buildings might be safer than the standing ones. But

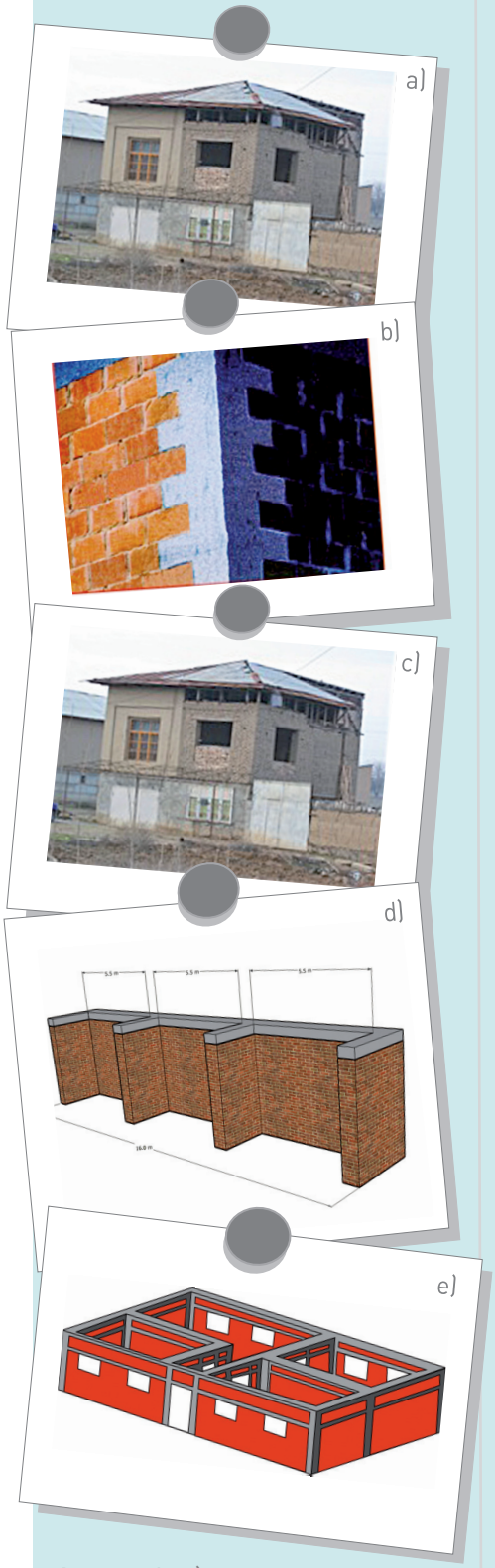


Figure 4.8: a) An example to a masonry building b) Combination of wall connected perpendicular to each other c) Higher spacing in carrying walls d) Limitation of length of load carrying wall and horizontal girder application e) Joints and layout of carrying walls

still these types of wreckages must be evaluated separately.

Warning!

- **LDVs must absolutely work in the buildings that contain no risk for search activities.**
- **They can work in other buildings only if they are helping to the professional teams and they are under their control.**

During the discovery phase before starting the search-rescue activities the assessment of the damage in the building must be made for safety. Although this assessment is required for the rescue teams at all levels, it is especially important for volunteer teams. So the damage assessment is made according to these four levels (Figure 4.9), (Table 4.2):

1- Light damage: it is safe to go in and out. Rescue activities can be performed inside and first aid can be applied.

2. Moderate damage: the risk of going inside and staying for a long time must be accepted. A long term operation should not be performed without taking necessary precautions. The most vital first aid should be treated inside the building. Only the alive people must be searched for and taken outside. No searching should be done without making an other damage assessment.

3- Heavy damage: the building might be standing or collapsed. It is not safe. No volunteers should work in it. It requires a professional search-rescue team.

4- Wreckage: there is not much left structurally. The whole columns, girders and coverings are pressed to the zero length. Mostly, the casualties close out might be saved in such types of damages.

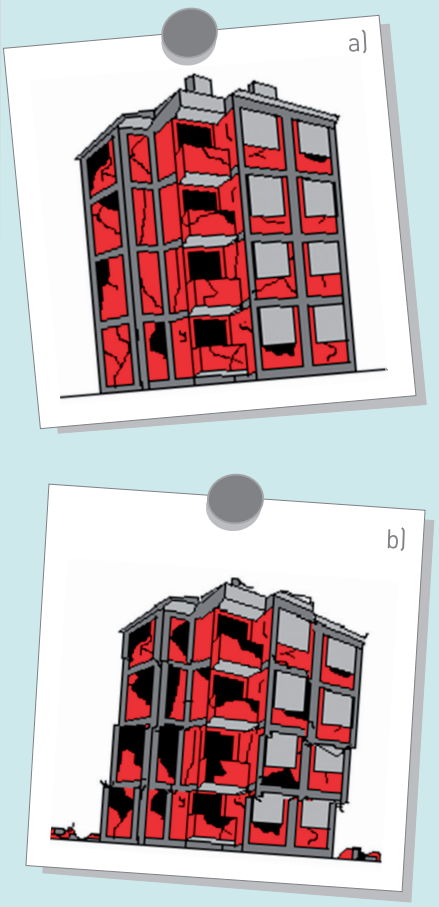


Figure 4.9: Damage assesment;
a)Light damage
b) Moderate damage

Table 4.2: Damage conditions of structures and the tasks of LDVs in these damage conditions.

The Condition of Structural Damage	The Task of LDV
Light: They are the planer and external damages. Broken windows, falling plasters are examples of them.	Transporting the casualties to the areas provided by medical teams by applying triage.
Moderate: They are the damages related to the stabilization of the building. Cracks, deflections, displacement within the foundation or shifting can be given as examples.	Making discovery and assessment inside the building with the minimum number of rescuers; evacuating the casualties to a safer place immediately.
Heavy: They are the damages endangering the building's remain standing. Partial or total wreckages on the walls, collapse of the ceiling.	Providing security around the building, providing the control of in and out the building with untrained but well intentioned volunteers.

A **LOCAL DISASTER VOLUNTEER** GENERALLY SHOULD PERFORM SEARCH AND RESCUE ACTIVITY IN LIGHTLY DAMAGED BUILDINGS!

Steps to Follow in Building Damage Classification

While making the damage classification of a building, an assessment according to the available information must be made. The aim of it is to decide whether to enter or not to the building during the response activities. What is important here is the safety of LDVs and the people around. During the damage assessments of the buildings the questions below must be taken into consideration:

- What is the damage within vertical and horizontal bearing components?
  - Column damage

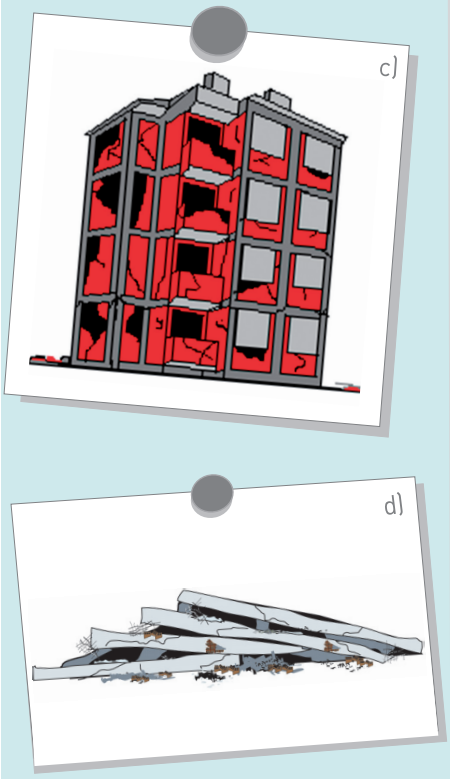


Figure 4.9: Damage assesment;
c) Heavy damage
d) Wreckage

- Shear wall damage
- Girder damage

o Are there nonstructural elements that are unbalanced or may create a risk?
o Is there a soft storey?
o Has there been the displacement of foundation?
o Has it fallen down?
o Have the mezzanine floors collapsed?
o Does the building have an unusual architecture?
o Are they attached buildings?

Damages within vertical and horizontal structural elements

Damages in reinforced concrete buildings: Damages happen in concrete buildings since the structural elements like columns, girders and their joints can not carry the load of the building and crack. While making damage assessment in these types of buildings any deformation like crack, failure, warping within structural and nonstructural elements must be considered. During the damage assessment of concrete buildings first of all;

- Column damages
- Column/girder joints
- Shear walls
- Nonstructural vertical elements should be paid attention.

Concrete column damages: There are vertically and horizontally attached iron rods (reinforcements) in concrete columns. The outer layer of concrete known as "cover" or "crust" is called as "concrete core".

The first place to check is the columns at the foundation or level ground, the joint parts of the column must be controlled as well.

Horizontal deflection/flexion cracks on concrete columns: if the cracks are long and thick along with some permanent deformations they might be dangerous.

Cross/diagonal cracks on concrete columns: if the cross cracks have the shape of an "X" or half of an "X" and are on a column or shear wall they are highly dangerous. This type of damage is called as "heavy damage".

The crack of concrete core in concrete columns: the crush of concrete core in the column and the spaces between the iron reinforcement and the concrete show heavy damage (Figure 4.10).

The failure and the warping of the material in concrete columns: disjointed cross joints, warping of longitudinal iron bars, separation of the iron from the concrete are the signs of heavy damage. Besides that disjointed horizontal materials that are placed to support vertical materials lead to other serious damages (Figure 4.11).

The crust spall in concrete columns: if the concrete core is not damaged and there are only spalls on the outer layer, in other words if there are crust spalls that shows the building is lightly damaged (Figure 4.12).

Column/ Girder joints: after analysing the columns the next point to examine is the column/girder joints. The joints between the column and the girder must be in perpendicular direction. Deformity, cracks or crushing within column/girder joints are very dangerous and they are the signs of heavy damage (Figure 4.13). "X" shape cracks or diagonal cracks on or around these joints foreshadow a heavy damage.

Shear walls: Shear walls are the structural elements designed to resist seismic effects in the building. It is a kind of large column. It can be understood with the deep sound when tapped on. They might be in different building types. In concrete buildings shear walls are seen as larger columns (The difference of shear walls from the columns is the fact that they are 5 times longer then columns). Shear walls would be seen in different building types like concrete, masonry, adobe and wooden.

Shear wall cracks: they happen approximately 45 degree angle. The cracks along the shear wall show the risk of the situation. Although the cracks thinner than 1 mm do not create risk, the cracks thicker than 1 mm are seen as risky. In masonry buildings zig zag cracks in 45 degree angle on shear walls that carry the load of the building must be evaluated as serious damages. But if they are on infill walls it does not mean a heavy damage.

Figure 4.10: Crack of concrete core in columns.

Figurel 4.11: Breaking off and warping of the materials in columns.

Figure 4.12: Crust spall within columns or girders.

Figure 4.13: Cracked or crushed column/girder joints.

Separation of shear walls: It is a sign of "heavy damage". Small and narrow separations on the walls must be accepted as serious damage. Because they might get worse with an after shock, the wall might fall over and so the roof might collapse.

Damages within nonstructural vertical elements

Infill wall cracks and holes: another damage type seen within vertical elements are the cracks and even the fallen parts of infilled walls. The cracks on the infilled walls covered with bricks or ceramics are generally in zig zag shape. This type of damage shows that not the building but the walls would be damaged. Therefore, **the cracks or spalls on infilled walls are accepted as light damages.**

Are the damages are partial or general?

In every condition the whole building must be taken into consideration during damage assessment. Several partial damages in a big building are accepted as "moderate damage". The damages general or around the building are accepted as "heavy damage" and they are dangerous.

Soft first storey

It is one of the most common and dangerous engineering failures in Turkey. Because of the ground floors with large, open and big windows, the building does not have the necessary reinforcement. The column and joint damages in the soft stories are really serious damages. These buildings are absolutely unstable (Figure 4.14).

Figure 4.14: The damages in the column and girder joints of the buildings with soft stories.

Foundation Shift

There has been a foundation shift within the building so it is not safe. Single storey composite structures do not

create much risk as higher buildings. Since such buildings are unstable, they are risky for any search and rescue activity (Figure 4.15).

Falling over

This type of collapse is rarely seen. Although there are shear walls that might reinforce the building, these types of collapses might be rarely seen in the buildings with insufficient foundations. Although the building seems balanced, actually it is not because the walls turn into ground and the ceiling with coverings turn into walls in such cases. In fact these components are not architecturally designed in this way. Therefore the buildings must be thought as unsafe, instable and unbalanced (Figure 4.16).

Collapse of mezzanine floors

They are rare, unpredictable and highly dangerous.the use of different materials and making changes within the building design (Partition of columns) might be given among the reasons of mezzanine floor collapse (Figure 4.17).

Unusual architectures

In some buildings different parts of the structure may show different behaviours due to architectural design and geometric figures. That might cause the increase of the tension and the serious damage of the building. Although the damages in the parts of the building might be seen different they are unbalanced/unstable since they are jointed together (Figure 4.18).

Damages by contiguous buildings

Another risk is the ruin from upper stories or the buildings around. the building might be at risk since it is not designed

Figure 4.15: Foundation shift and settlement in buildings due to liquefaction.

Figurel 4.16: The fallen over buildings after an earthquake.

Figure 4.17: Examples of buildings with mezzanine floor collapse.

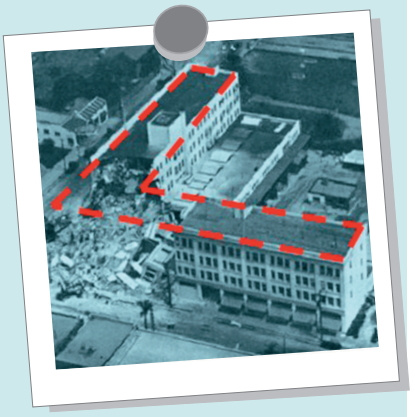


Figure 4.18: Being damaged of an "L" type building after an earthquake.

Figure 4.19: An example to the damages seen in contiguous multi-storey buildings.

to bear such extra loads. These buildings must be reinforced in a safe way before entering them.

It should not be forgotten that, it is the task of professional teams to work in and reinforce a building with heavy damage. LDVs may help them by providing equipments (Figure 4.19).

V. FIRST AID

First Aid in Disasters

The results of disasters are directly related to health problems like death, injuries, becoming disabled and ill. Therefore health becomes the most important point to dwell on in disaster planning and management.

It is highly important to know the first aid while responsing injured people in disasters like earthquakes for any rescue attempt. The most confronted injuries are internal and external bleedings, head, breast, stomach and eye injuries, bruises, fractures and burns.

The main aim in first aid training is to give the training of bringing back the injured person to life and/or maintaining life functions. It is known that the response within the first minutes has vital importance. The surviving of the patient depends on the patency of the airway, maintaining respiration and heart massage. Although first aid has to be an immediate treatment, the arrival of professional medical teams to the scene on time is very difficult. So it is vital for individuals to be trained about Basic Life Support. For instance, Taking the bleedings under control on time and giving the right positions to the victims would be absolutely lifesaving

There are many points to pay attention during first aid treatments in disasters. The rescue efforts that are unconsciously done may lead to new bleedings, fractures or serious injuries. The first rule in saving someone under wreckage is to free the injured person without bending any parts of the body to the right or left and taking him/her out by pulling the whole body. And also it would be proper to pull the person on a hard material (ex: door) in the same size. And it should be taken into consideration that different parts of the injured person might be still under wreckage. The lack of information on first aid techniques or the mistakes made in good purpose to save lives may lead to adverse outcomes.

If there is a medical personnel in the accident scene he/she should response to the victim and if there is not a personnel then a person who has first aid training should response and the others should help him/her. Those who do not have first aid training should **NEVER** response to the injured person.

The recent disasters have revealed that after a few days when the first impacts of a disaster are overcome there remains a community with unhygienic conditions (water, food, housing and nutrition) and distorted protective health services. In such conditions the possible diseases might lead to epidemics along with current ones and even they may result in more serious problems than disasters.

For this reason several precautions must be taken to prevent diseases turning into epidemics. Especially water, food, waste and personal hygiene are very important. Some special pollution (toxic substance, radiation etc.) may appear as a result of the event that caused the disaster and they may create more serious hazards.

Basic First Aid Rules

- First provide the safety of yourself and the environment.
- Leave the main response to those experienced on first aid around you if there is any, you just help them when it is necessary.
- Keep calm and try to calm down the people around you.
- Examine the injured person calmly and fast.
- Do not apply the things that you are not sure.
- Calm down the injured person and his/her relatives.
- Give detailed and exact information to the medical personnel arrived to the scene.

Basic First Aid Principles in Disasters

Hazard: Control whether there is any gas, electricity etc leakage hazard where the injured person stays.
Carrying: Provide the transportation of the casualty from the scene of event properly.
Triage (Separation): Determine carefully the priority of response when there are many casualties or patients.
Diagnosis: Give priority to the vital problems like respiration, circulation, bleeding, shock, consciousness.
Communication: Provide the necessary medical and rescue teams to the scene of event by informing relevant units.

What is First Aid?

First aid aims saving lives, minimizing the effect of injuries and healing. **FIRST AID** is a drugless practice which is applied with the available resources to the person whose life is in danger after an unexpected accident or a disease until the medical staff arrives.

Why Should I Take First Aid Training?

International Labour Organization (ILO) has stated that more than 2 million people die due to work accidents and occupational diseases in the world. According to SSK statistics 811 people (2003) lose their lives in Turkey every year. Each year 76.668 accidental injuries have been reported in Turkey. 10% of deaths in traffic accidents happen in the first 5 minutes and 50% of them happen in the first 30 minutes. In

addition to this, 18-25% of accidental deaths are the cases that might be overcome with sufficient response.

In the whole world it is targeted for emergency ambulance teams to arrive the emergency points in 10 minutes in cities and in 30 minutes outside the cities. But when the traffic jam, weather conditions and disasters are considered this process might be longer. In such a case the injured person or patient must be treated by the others who have first aid knowledge. At this stage providing a response in accordance with world health norms may increase the patient's chance for life, prevent the complications and have an important role in saving lives by making the recovery easier.

Since Turkey is on a seismic belt in other words it is an "earthquake prone country", first aid becomes much more important in our country. Giving first aid support to the people around during a possible earthquake is a vital skill. It should not be forgotten that this support might be only given by professionals who have first aid training. Besides, increasing the number of people who is trained on first aid topic might be helpful to the society in these cases.

First Aid Saves Lives!

It is necessary for everyone to know the steps of first aid. Any response that is unconsciously done might aggravate the condition of injured person or patient. The most important help for the patient is to be calm down, informing a medical institution and controlling the life functions of the patient.

In the cases that require first aid providing our safety and preventing it from getting worse would be enough.

In our daily life we would have sudden changes. Accidents are the major part of them. On the other hand accidents may happen due to all taken precautions. At such times not getting into panic in emergency situations is the first thing to do. In these situations your best opportunities are a well equipped first aid kit, the training you get beforehand and your own skill.

Aims of First Aid

Preserve life: Response to a bleeding and taking it under control mean saving lives.
Prevent further damage: For instance the broken bones might injure the veins or nerves. A first aider providing the immobility of a casualty who is thought to have a fracture may prevent these damages.
Promoting recovery: Proper first aid treatments may promote the recovery of casualty

Figure 5.1: All individuals whether they have social security or not might get medical help for free from 112 in case of emergencies.

or patient faster. For instance in burnings keeping the burnt body part under water for 15-20 minutes might promote recovery.

Maintenance of life functions: Human brain can resist for 3-5 minutes without oxygen. Maintenance of life functions might be provided by artificial respiration and hearth massage.

How is Medical Help Called?

The most important point that should not be forgotten for life saving is to call 112 Emergency ambulance service on time. 112 Emergency ambulance service is a free institution established by Ministry of Health to provide necessary medical help to the patients/casualties in case of an emergency. All individuals whether they have social security or not might get medical help for free from 112 in case of emergencies. 112 might be called from any type of telephone (fixed, mobile, satellite or car phones) for free. The increase in the use of mobile phones makes emergency calls easier. It is possible to make 112 call even if the keypad is locked.

But this speciality changes according to phone marks so you have to get information about the specialities of your phone (Figure 5.1).

While giving information to ambulance service on phone you should be calm or a calm person should call 112. The official of 112 would direct the questions below. To be prepared for these questions would make the arrival of ambulance even faster.

- What happened? (For instance: Traffic accident, heart attack, trapped under wreckage etc.)
- Where it happened? (The exact address must be given and described according to the familiar places.)
- How many casualties are there? (An approximate number must be given to decide the required ambulance number.)
- How serious is it? (Some information must be given

roughly about the situation as it looks. For instance: The number of seriously or slightly injured people.)
- The phone number and the caller (The caller must give his/her name and phone number, stay in the scene of event until the ambulance arrives and should not busy the phone since there might be a call back.)

While talking on the phone the phone should not be hung up until the operator says and it should not be kept busy. The first aider must appoint someone to make the help arrive, meet the ambulance and keep the way open.

It should not be forgotten that even the seconds are very important in emergencies.

Things Not To Do in Emergencies

Let's learn the things not to do before learning the things to do during an emergency :

- Do not leave the casualty alone.
- Do not move him/her.
- Do not make him/her drink water.
- Do not dash water on his/her face.
- Do not force him/her to sit.
- Do not try to bring him/her up by slapping.
- Do not give medicine.
- Do not try to make him/her throw up.
- Do not smell cologne, onion, etc.

Always act discreetly; do not put yourself in danger with unplanned actions. It is important not to lose time but still remember the fact that it would be dangerous to response the casualty without being sure about the safety of the place.

It should not be forgotten that unconscious approaches directed to patient or casualty might be harmful. Those who do not have necessary training may cause injuries and even lose of lives during first aid. We have news about people who lose their lives while trying to response emergencies like traffic accidents or drowning.

Assessment of Accident Scene

A first aider should assess the surrounding before responsing the casualties in an accident scene. As a result of the lack of assessment both the casualty and the first aider get injured and the first aid treatment fails. Injures as a result of carelessness while trying to save the casualty mean another casualty.

The first aider in the place of event;

- should be extremely calm.
- should be highly motivated.
- should think fast.
- should know what to do, predict the risks.
- decide quickly.

Therefore if the first aider is one of the casualties he/she should first check his/her own situation and take necessary precautions for his/her life safety. If there is any medical personnel around, the first aider should follow their instructions and help them. If there is no medical personnel then the control must be taken over and healthy people around must be organized.

The first aider should try to find out the answers of these questions while assessing the scene of event:

- Is there any hazard for the first aider in the scene of event?
- Is there any hazard for the casualty in the scene of event?
- Is any special equipment required to save the casualty?

Event scene assessment steps

Safety (security measures): Review all elements that would create risk and make sure there is no risk element both for the first aider and the casualty during first aid treatment.

Scene of event: Search whether there is any risk of fire, explosion, collapsing or sliding. Inform the aid team about these hazards. Decide your actions to reach the casualties according to that.

Situation assessment: Make an assessment on the event, the reason of it, number and the age of casualties.

It is important to apply first aid to the casualty immediately, but both safety of the casualty and the first aider have primary importance. There might be hazards like fire, explosion, collapsing, falling, poisoning, getting trapped, suffocation and attack in the scene of event both for the first aider and the victim.

If there is fire risk in the scene of event;

- Press the fire alarm button.
- Call fire department (110).

- Try to extinguish the fire with available resources until the fire team arrives.
- Close the doors and windows to prevent the spread of fire.
- Do not put yourself or others in danger while doing these.

If there is someone burning;

- If the person is standing the evolved gas may get into airway and the hair may catch on fire much more easily.
- The person should lay on the floor and turn around himself/herself.
- The fire might be extinguished by covering the person with a blanket or carpet.

Assessing the Casualty

A person can survive for weeks without eating and for days without drinking water. But he/she dies in minutes without breathing. Therefore it is required to check the conscious of the casualty and then control whether he/she is breathing or has any other injuries.

In case of emergency when there is more than one casualty first the casualty must be assessed.

The aim in assessing the casualty is to;

- Provide the safest response for casualty
- Define the seriousness of the illness or injury
- Define the most serious injured person
- Decide the first aid method that is going to be applied

Assessment of casualty has two steps:

1. Primary assessment
2. Secondary assessment

When there is a casualty first the primary assessment should be made and if the casualty is breathing then secondary assessment should be applied.

Primary assessment:

Control of consciousness: Since having an open conscious is a sign of life first of all the control of consciousness should be made. Therefore the casualty must be hold from shoulders and shaken gently and he/she must be called "Are you Ok?" in the face. **Airway control:** If the person does not show any sign of life then he/she must be lied on his/her back to the ground. The airway should be tried to open with head tilt and chin lift technique. In this way the blocking of air way is prevented.

Breathing control: It should be controlled whether the casualty is breathing or not by "Look-Listen-Feel" method.

If there is not a normal respiration than Basic Life Support should be started immediately. If there is normal respiration than secondary assessment should be applied.

Secondary Assessment:

Secondary assessment includes an overall control of the casualty, getting information whether there is another injury or not and the seriousness of illness from the casualty himself/herself by talking or from the people around and deciding the things to do according to this information.

Getting information by talking: If the condition of the casualty lets him/her talk to you then try to get answers to the questions below as calm as possible.

- Does he/she have an illness?
- Does he/she use any medicine? If yes what are they?
- Is he/she allergic to something?
- Did he/she drink alcohol?
- What and when did he/she eat something last?
- What is the matter with the casualty?

Learn how the accident happened: Try to understand whether there is any problem with the conscious of the patient by making him/her speak. Assess the overall vital symptoms of the casualty while speaking with him/her.

Check up: It is developed not to miss any point. Tell the casualty that you are going to control him/her and to inform you if he/she has any pain or ailment. While checking the head, neck, breast, stomach, thigh, arms and legs control whether there is any bleeding, deformation, colour change, lump, anything pricking and any pain when you touch.

Life symptoms: Body temperature, blood pressure, respiration and pulsation are controlled as life symptoms during secondary assessment phase. Their normal rate, measuring techniques, how may they change in which conditions and how to response these differences observed in patients must be known.

- Respiration rate, rhythm, depth: Adults breath 12-20 times per minute while babies and children have 20-25 respiration rate per minute.
- Pulse rate, rhythm, intensity: The pulse rate is between 60 and100 per minute.

- Body or skin temperature, moisture, colour: normal body temperature is between 36 and 37.5°C.

First aid kit: You should get a first aid kit with necessary equipments that would save your relatives and your life in case of an emergency and keep it in your house, car and working place (Figure 5.2).

The materials that should be in a first aid kit:

- Self adhesive bandages with different sizes
- Sterile gauze bandages with different sizes
- Sterile bandages
- Elastic bandages
- Triangular bandages
- Plasters
- Scissors
- Hooked needle
- Thermometer
- Latex gloves
- Respiratory mask
- Zip lock plastic bags
- Ice batteries
- Isothermal blankets (aluminium foil)
- Burn plasters.

Figure 5.2: First aid kit.

Basic Life Support

The vital functions of our body to survive are respiration and circulation. Brain cells start to die in 3-5 minutes if the respiration stops and in 10 minutes the brain death finishes. In normal city life generally it takes more than 10 minutes for an ambulance to reach the victim. Therefore in case of emergencies like heart attack, drownings, electric shock etc. that cause respiratory and circulatory systems to stop artificial respiration and heart massage should be applied immediately. This application is named as Basic Life Support.

Applying Basic Life Support to a casualty whose respiration and circulation have stopped until an ambulance arrives would continue the brain functions and increase the victim's chance to survive.

It should not be forgotten that everybody might face with these types of emergencies at

Figure 5.3: Control of consciousness.

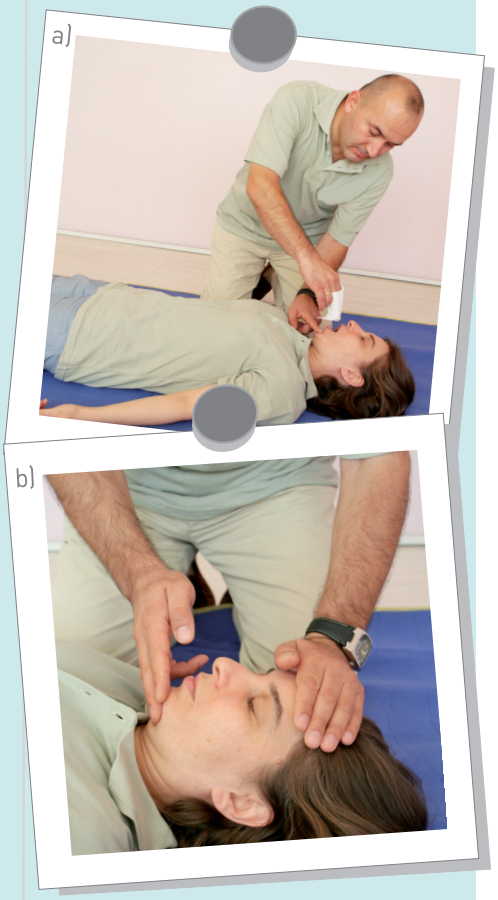


Figure 5.4: a) Checking the airway of casualty b) Opening the airway.

any time; for that it must be learnt how to apply Basic Life Support.

Basic Life Support training must happen on specially designed models for artificial respiration/heart massage trainings practically. Trying to apply artificial respiration and heart massage without having a practical training from a licensed trainer might cause negative effects. Basic Life Support application has some small but important differences in application for infants, children and adults. In Basic Life Support:

- Over the age of 8 – Adult
- Between 1-8 years of age – Children
- Under the age of 1- Infant

Control of consciousness: You should control the conscious of the casualty before starting any response activity.

If you are suspicious of a neck or backbone injury do not move or shake the casualty. If there is none of them you should control the conscious of the casualty by gently shaking from his/her shoulders and asking "Are you Ok?". If you know the casualty you may call him/her by name (Figure 5.3).

If the casualty is responding or moving and there is no hazard around, leave him/her in the same position. Check the casualty and call for help if it is necessary. Do not leave the casualty until the help arrives and keep him/her under control all the time. If the casualty is not responding immediately call 112 and check the airway.

Airway: If the casualty is unconscious and does not responding the airway might be blocked. Get the casualty lie back position if he/she is in other position when you find him/her.

In such a case something might have blocked the airway. Therefore before opening the airway of the casualty check inside of his/her mouth whether there is any

foreign substance. Turn the head and take out the things in his/her mouth with your finger. If there are any false teeth removed take them out. Unconsious casualties are generally found lying back, in this position the casualty's airway is blocked. Put one of your hands to the casualty's forehead and hold his/her chin by tilting the head and lifting the chin. The head should be kept in this position otherwise it might fall and block the airway again (Figure 5.4.b).

Breathing: The next step after opening the casualty's airway is to check whether he/she is breathing or not. Check whether the respiration of the casualty is normal with "Look-Listen-Feel" method by keeping the airway open.

Place your ear close to the casualty's mouth and listen to the breath sound; try to feel the airflow on your cheek and watch the movements of rib cage at the same time. In order to decide whether the respiration of the casualty is normal continue "Look-Listen-Feel" method for 5 seconds (Figure 5.5).

Figure 5.5: Breathing control.

If the respiration of casualty is normal get him/her in coma (recovery) position but if it is not normal give two effective rescue breaths that would move the chest.

Heart massage: If there is no sign of circulation or you are not totally sure you should start heart massage. With one hand find the breastbone which is located between the two sections of ribs. With the forefinger of your other hand find the tip of breastbone. When you combine your thumbs you find the place to apply heart massage. Clamp your hands placing the stronger one beneath (Figure 5.6). The important thing here is not to touch the fingers to the casualty's chest.

Stay beside the casualty and made pushes that would fall the chest for 4-5 cm with straightened elbows. Loose the

Figure 5.6: Steps of heart massage.

pressure without removing your hands. Continue the heart massage with nearly 100 rhythmic pushes per minute (less than two pushes per second). Counting aloud might be useful to sustain the rhythm. Pay attention to keep the pushing and loosening process equal. After 30 heart massages give two effective blows by tilting the head and lifting the chin. Continue heart massages and rescue breaths in 30/2 ratio. Continue the basic life support until the casualty starts breathing, ambulance arrives or the rescuer gets exhausted.

Basic Life Support for Children

Basic Life Support (BLS) for 1-8 ages has some differences from the one that is applied to children whereas it has some similarities between the basic life support for adults (Figure 5.7). First aider should assess the scene of event first. He/she should introduce himself/herself to the people around and get permission from the injured child's family.

Control of conscious: You should control the conscious of the child before starting any response activity.

- Control the conscious of the child by holding from shoulders and shaking him/her gently and asking "Are you Ok?". If you know the casualty you may call him/her by name. If the child is responding or moving and there is no hazard around leave him/her in the same position. Check the casualty and call for help if it is necessary. Do not leave the casualty until the help arrives and control him/her all the time.

- Giving no reaction shows that the casualty is unconscious. In such a case call 112 emergency ambulance immediately and check the casualty's airway. If the first aider is alone and there is no telephone around he/she must leave after applying 2 minutes Basic Life Support (30 heart massages- 2 rescue breaths for 5 times).

BASIC LIFE SUPPORT ALGORITHM:

1. **SAFETY**
   Provide the safety of the scene.
2. **Control of Conscious**
   Define the motionless and unconsciousness.
3. **112**
   If he/she is unconscious call 112. You can make someone call it.
4. **AIRWAY**
   Check inside the mouth ensure an open airway with head ang chin position.
5. **BREATHING**
   Look-Listen-Feel for 5 seconds. Givetwo effective rescue breath if there is no respiration.
6. **HEART MASSAGE**
   Give 100 heart massage per minute that would fall the chest 1/3 scale.
7. **2 BREATHS-30 MASSAGES**
   Continue Basic Life Support with 2 breaths-30 massages until the respiration starts or the medical team arrives.
8. **COMA POSITION**
   It must be applied when the respiration starts.

Figure 5.7: Basic Life Support for children.

Airway: If the child is unconscious and does not responding the airway might be blocked.

- Get the child lie back position if the child is in other position when you find him/her.
- Check his/her mouth if there is any foreign substance inside it. And if there is something take out it with your finger.
- Unconsious casualties are generally found lying back, in this position the casualty's airway is blocked. Put one of your hands to the casualty's forehead and hold his/her chin by tilting the head and lifting the chin. The head should be kept in this position otherwise it might fall and block the airway again.

Breathing: Check whether the respiration of the child is normal with "Look-Listen-Feel" method by keeping the airway open.

- Place your ear close to the child's mouth and listen to the breath sound; try to feel the airflow on your cheek and watch the movements of rib cage at the same time.
- If the respiration of child is normal get him/her in coma (recovery) position.
- If it is not normal start artificial respiration.

Artificial respiration: If the child's respiration is not normal then give two rescue breaths that would move the sternum. Place your mouth over the child's mouth and exhale.

- Each breath must be longer than a second and effective to move the sternum. If there is no reaction, movement or coughing from the casualty after two effective rescue breath, heart massage must be applied immediately.

Heart massage: Apply 30 heart massages just after 2 rescue breaths.

- Heart massage is applied to the middle part of breastbone (sternum).
- Stay beside the child and place your hand in the middle of breastbone give pushes that would fall the chest for 2,5-5 cm (1/3 of the chest when looked aside) with straightened elbows.
- Loose the pressure without removing your hand and continue heart massage with nearly 100 rhythmic pushes per minute (less than two pushes per second).

Artificial respiration- heart massage: counting aloud might be useful for thumping out.

- Pay attention to do process of compression and loosening steps to be equal.
- After 30 heart massage tilt the head and lift the chin and give 2 effective rescue breaths. Put your hand to the previous place on the chest.

- Apply 30 more heart massages. Repeat heart massages and artificial respiration with 30 massages-2 breaths. Continue the basic life support until the casualty starts breathing, ambulance arrives or the rescuer gets exhausted.

Basic Life Support for Infants

Basic life support for the infants under the age of 1 (BLS): First aider must assess the scene first and introduce himself/herself to the people around and get permission from the injured infant's family.

Control of conscious: you should control the conscious of the infant before starting any rescue activity.

• Control the conscious of the infant by tapping him/her. The infant is hold by the feet and tapped for a few times. If the infant gives any reaction (cries, takes of its foot or moves) and there is no hazard around leave it in the same position. Check the infant and call for help if it is necessary. Do not leave the infant until the help arrives and control it all the time.

• Giving no reaction shows that the infant is unconscious. In such a case call 112 emergency ambulance immediately and check the airway.

If the first aider is alone and there is no telephone around he/she must leave to call help after applying 2 minutes Basic Life Support (30 heart massages- 2 rescue breaths for 5 times).

Airway: Bebeğin bilinci yerinde değilse ve cevap vermiyorsa, bu durum hava yolunun kapalı olabileceğini gösterir.

• Get the infant lie back position if it is in a different position when you find.
• Open the infant's mouth and check for any foreign substance if there is take it off by using your fingers as nippers.

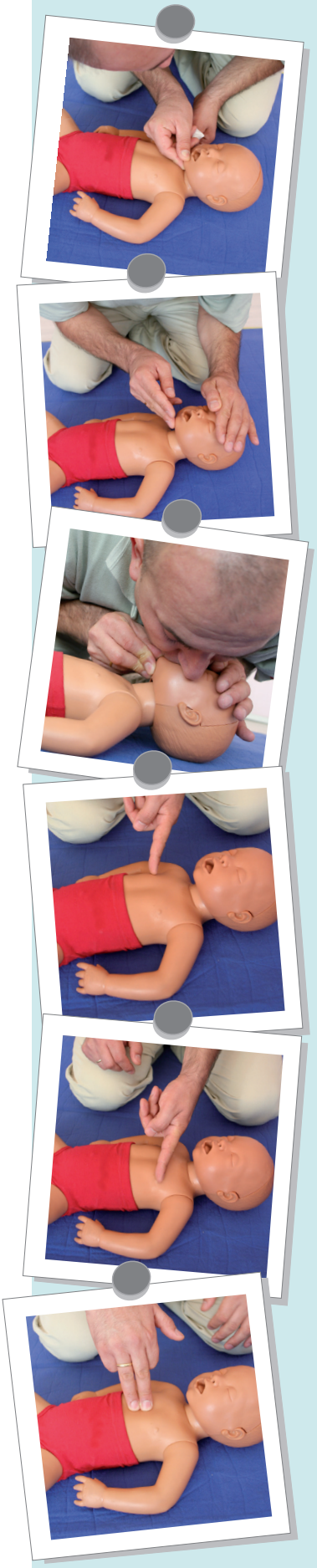


Figure 5.8: Basic Life Support for Infants.

• The infant found unconscious might has a blocked airway. Put your hand on its forehead and hold its chin with your other hand, lie down the infant by extending its head and lifting the chin gently (looking across position). The infant's head should not be totally extended as in adults because the airway would be blocked again in this position.

Assessment of breathing: Check whether the respiration of the infant is normal with "Look-Listen-Feel" method during 5 seconds by keeping the airway open.

- Place your ear next to the infant's mouth and listen and feel with your ear for any breathing while looking along the chest for any chest movement.
- If the respiration of infant is normal turn him/her on its side or take it on your lap.
- If it is not breathing normally start artificial respiration.

Artificial respiration: If the infant's breathing is not normal give 5 effective rescue breaths that would rise the chest. Place your mouth over the infant's mouth and nose and exhale.

- Each breath must be longer than 1 seconds and strong enough to rise the infant's chest. After five effective rescue breaths if there is any coughing, movement or reaction of the infant then immediatley start heart massage.

Heart massage: Apply 5 rescue breath and then 30 heart massages.

- The part to do heart massage: an imagenery nipple line should be drawn. The heart massage is applied to the part under this line.
- Stand upright beside the infant; place the middle and ring finger on the chest where you are going to apply heart massage. Give pushes that would fall the chest 1-1,5 cm.
- Loose the pressure without removing your hand and continue heart massage with nearly 100 rhythmic pushes per minute (less than two pushes per second).

Artificial respiration- heart massage: Counting aloud might be useful for thumping out.

- Pay attention to do process of compression and loosening steps to be equal.
- After 30 heart massages open the airway and give 2 effective breaths. Place your hand to the same point on the chest.
- Apply 30 more heart massages. Repeat the heart massage and artificial respirations with 30 massages-2 blows.

Continue to the Basic Life Support until the infant starts breathing, the medical help arrives or the rescuer gets exhausted.

Coma Position

Coma: it is the lose of consiousness as a result of losing swallow and coughing reflexes and not giving any reaction to the external warnings. In coma the person is uncounscious but still continues breathing.
If the casualty is unconscious but breathing he/she must be lied in rescue position. In this position an open airway must be provided and in case of vomiting it must be paid attention not to block the airway.

Blocking of The Airway

It is the blocking of the airway not letting air passage. Airway might be blocked with foods, vomit, flase teeth, broken teeth or blood. It is commonly seen as the escaping of foods to the windpipe while eating.

Airway blocking might be divided in two like;
- Partial
- Complete

Partial blocking: They are the cases when the airway is not totally blocked and the breathing continues. The casualty can:

- Cough
- Breath
- Speak in this condition.

The casualty is not moved and made cough by standing next to him/her. If the situation is getting worse and the coughs die away and the casualty becomes bluish 112 must be called immediately.

Complete blocking: They are the cases when the windpipe is totally blocked. The casualty in this situation:

- is not able to breath.
- is in pain and put his/her hands to his/her throath.
- is not able to speak.
- has bluish skin of the face.

in this case Heimlich maneuver must be applied.

The method of Heimlich maneuver for adults and children:

- The casualty might be in standing or sitting position.
- Stand behind the casualty and grasp his/her body.
- Place the thumb of one of your hands on the stomache beneath the breastbone by making a fist. Cover your fist with your other hand.
- Press inward and upward strongly.
- Repeat it until the obstruction is cleared or the casualty regains his/her concsious.
- When the casulaty loses his/her concsious start Basic Life Support.
- Medical help is called (112).

The methods to open the airway of infants in complete blocking (Figure 5.9):

- The infant is placed facedown on the first aider forearm.
- The infant's neck is supported with the thumb and the chin is grasped with the help of other fingers and he/she is kept facedown.
- Give 5 back slaps between the baby's shoulder blades.
- If the object does not pop out place 2 fingers below the nipple line and give 5 chest thrusts that would fall the chest for 1-1,5 cm and check inside the mouth.
- Keep giving back slaps and chest thrusts until the objects pops out.
- When the infant becomes unconcsious start Basic Life Support.
- Call for medical help (112).

If the casualty becomes unconsicous that results in relaxation of airway muscles so the airway passage becomes possible. If a casualty with a blocked airway loses his/her consciouness Basic Life Support must be started by following the things below:

Figure 5.9: The method to open airway for infants in complete blocking.

Check inside the mouth and take out any visible object. Open the airway in head tilted-chin lifted position and check the respiration with "Look-Listen-Feel" method. Try to give two rescue breaths and start 30 heart massage. After the heart massage check inside the mouth and if there is any obstruction take it out. Then keep on rescue breaths and heart massage until the casulaty's respiration gets normal.

Drowning

Drowning is a fatal event resulted from the lack of oxygen needed for body. It is a kind of death caused by the blocking of airway due to the contraction of airway muscles or liqued intrusion to the lungs.

First Aid in Drowning

When you see someone drowning just help him/her but never put yourself in danger. If you are not sure of any other alternatives never get into water or go out onto ice.

In such a case;

1. Throw a rope attached to a buoyant object.
2. Throw a rescue rope or life jacket to the victim and pull him/her.
3. Extend a long pole or branch.
4. If you are on a small boat or craft do not let the casualty to climb on it; otherwise it might turn down and both of you might fall into water.
5. The casualty who has fallen into water or through ice has hypothermia. It may not be easy for the person to grasp the object you extend. In such a case make the casualty stay conscious by talking to him/her. And it is very dangerous to save the casualty without providing security.
6. If the casualty is in water and still struggling and if you believe you are strong enough and can swim well or have a swimming rescue training get the casualty out of water immediately.
7. If the drown person is not breathing start mouth to mouth resuscitation because starting rescue breaths comes first rather than carrying him/her to the shore. If there is no breathing give fast rescue breaths for 4-5 times at the start and then continue it every five seconds and take the casualty to the shore.
8. Start Basic Life Support if the casualty is not breathing when you are on land. If you are alone call 112 after applying BLS for two minutes.
9. Be cautious while carrying the casualty by assuming that he/she might be injured. Lay down the casualty on a litter or on a hard surface. It is important to reassure

the casualty and avoid any movements.

10. Remove any cold, wet clothes to prevent hypothermia and cover with something warm if possible because body loses its temperature on land 25-30 times faster than in water.
11. If the casualty has any injuries take care of them.
12. The casualty may cough or has difficulty in breathing once he/she gets normal breathing. Try to reassure the person and talk to him/her until the medical help arrives.
13. All near-drowning casualties should be checked by a doctor even though they are rescued. Because lung infections are very common in these cases.

Heart Attack

Heart is a strong pump that normally throbs for 60-100 times and pumps blood to whole body. It needs to be fed and supplied with blood while supplying the necessary blood for the whole body. The blood supplying vessels of the heart are called as "coronary arteries". There might be some occlusions within coronary arteries due to several reasons in time. As result of this stenosis some chest pains might appear. There might be chest pains appear during physical exercises and disappear after having a rest but sometimes these pains appear suddenly due to occlusions, they start with acute pain and even lead to vital heart attacks (infarction).

There are some symptoms of heart attack that causes deaths around the world and in our country as well. Among them there are; An uncomfortable pressure, squeezing, fullness in the centre of the chest lasting more than a few minutes, a chest pain spreading to the shoulders, head or arms; chest discomfort with light-headedness, fainting, sweating, nausea and cold sweating.

First Aid in Heart Attack

A person with an acute chest pain and shock should be thought as having a heart attack so the patient should be calmed down, seated and helped to take the medicines he/she uses and medical help should be called immediately.

- The patient should be seated stretching out the legs.
- The tight clothes should be loosen.
- If there is any medicine the patient must use, they should be provided and no other medicine should be given.
- The patient should not be left alone until the help arrives.
- If the respiration stops you should start Basic Life Support immediately.

First Aid in Fainting

Fainting is defined as a brief loss of consciousness due to a temporary drop in blood flow. In other words the patient can not remember anything when he/she faints since there is the loss of consciousness. And there might be some injuries resulting from hitting somewhere. When the patient faints brain gets more blood than usual. If there are not problems due to injuries after fainting it lasts short and the patient regains his/her consciousness. The first aid treatments in case of fainting are as it follows:

- The security of the scene should be provided.
- Consciousness and life symptoms should be assessed.
- The patient should be laid on his/her back and the feet should be elevated 30 cm above.
- If the respiration is normal then an ambulance should be called.
- If the patient is going to be left alone coma position must be given.
- The patient should be taken care until the ambulance arrives.

Epileptic Seizure (Fit)

An epileptic seizure is a neurological situation which is characterized with sudden and repeating convulsions. It happens due to neuronal activities in brain and mainly causes short loss of consciousness. Epileptic seizures may happen in different types. In some seizures there are unusual perceptions where is in others the patient may fall down or may have foam at the mouth. The things to do in epileptic seizures are as it follows:

- Remove any solid and sharp objects around.
- Place something soft under the head like a folded jacket.
- Call an ambulance.
- Do not restrain the patient and put anything into the mouth. Do not make the patient smell anything like onion etc.

First Aid in Hypoglycaemia

The drop of blood sugar under normal levels is called as “hypoglycaemia”. It may be seen as a result of missed meals, hard exercises or improper treatments of diabetic patients. The symptoms of low blood sugar are over sweating, palpitation, trembling in the hands, loss of concentration, difficulty in speaking, irritability, nausea, hunger and a complete loss of consciousness.

- If the patient is conscious some sweets or sweet drinks (juice etc.) should be given.
- If the patient is unconscious then he/she should be given the coma position.

First Aid in Poisonings

The body's losing its normal functions due to a hazardous (toxic) substance that gets into the body is called "poisoning". The most common type is food poisoning. Generally consume of stale chicken, fish or mushroom and drinking chemicals by mistake cause food poisoning.

Immediate medical aid is required in poisoning. The attempt to make the patient throw up is generally useless and also it might be dangerous when a chemical material is swallowed or the patient is unconscious. Therefore trying to make the person throw up or drink something is not suggested as a first aid treatment. An ambulance is called or the patient is taken to hospital according to the seriousness of the situation. Basic Life Support is applied if necessary.

To understand the type of poisoning, wastes, package and vomit should be given to the medical personnel. In case of a suspicious poisoning case International Poison Centre (114) might be consulted.

Bleedings

"Bleeding" is the blood escape from the vein. Bleedings are the vital parts of first aid treatment. No matter what the type or the reason is an unstoppable bleeding is liable to cause shocks or deaths. Most of the deaths in accidents are resulted from bleedings. The most required skills and information for a first aider to know are about how to control a bleeding. An adult person has 5-6 litres blood. The loss of nearly 1 litre blood means death for an adult.

Bleedings may be divided in three groups according to the types of vein:

Capillary Bleedings: Since they are very thin and has less amount of blood there might be a small and oozing bleeding when injured or cut. It might appear due to a small cut or impulse. The bleedings generally stop themselves and create no serious risks.

Venus bleedings: they are the veins that carry the blood back to heart from cells and tissues. In this bleedings the colour of the blood is dark and there is a slow and steady blood flow. Mostly they might be taken under control by applying direct pressure on the wound. It does not create a risk as long as the bleeding is taken under control.

Arterial bleedings: they are the blood vessels which carry the blood from heart to the cells and tissues. Arterial bleedings spurt out. The blood is bright red in colour. They are mainly hard to control and if not stopped may lead the vital problems.

The first aider intends to stop the bleeding and prevent shock. Now let's examine the bleeding control methods from the easiest to the hardest one according to the application.

Bruises

Typical bruises cause the blood escape from the capillary vessel closest to the surface. Since the vulnerability of our veins increases with the age, elders might get damage easier than children. If the bruises are on the head they must be evaluated in terms of head trauma. To reduce the bump and the pain keep the bruised area raised and apply cold compress (ice must be wrapped up to a piece of fabric or ice batteries must be used) for 30-40 minutes. Continue this for a few days according to the size of the bruised area until the pain reduces.

Scrapings

A minor cut must be cleaned with an antibacterial soap and clear water. Applying pressure to the wound for a few minutes would be enough to stop bleeding. Using bandages for a short time would be enough to keep the wound clean (Figure 5.10).

To stop bleeding;

1. Keeping the wound above heart level and not moving it would partially stop bleeding.
2. The bleeding should be stopped by applying direct pressure to the wound with a sterile gas bandage or a piece of clean clothe. And then the bleeding might be stooped by dressing the wound with bandages. The clothes that get wet with blood should not be changed, and the wound should be dressed with new bandages that would continue pressure.

Figure 5.10: Response to minor cuts.

3. The casualty should be reassured and the wound should be fixed preventing any movement.
4. If there is an arterial bleeding in the arms or legs the bleeding might be stopped by applying pressure to the wound. The pressure points are on the inner surface of the arm and on the crotch from where you can feel the pulse.
5. Most of the bleedings might be stopped by applying pressure bandage to the wound. A few of them might require tourniquet. Tourniquet should be thought as a last resort and should be applied when the bleeding can not be stopped with the methods mentioned above.

Applying tourniquet or pressure points would not be appropriate if not trained. Tourniquet is applied as a last resort when there are several arterial bleedings and not necessary treatment on time, when the rescuer has to leave the casualty or does not have the power to apply compression. Tourniquet is applied to the single boned area between shoulder- elbow or knee-hip (Figure 5.11). Stop the whole circulatory system is not an desired treatment since it might damage the tissues.

Figure 5.11: Tourniquet application.

Internal Bleeding

In some cases there is a small bleeding outside whereas there might be a vital bleeding in other words an internal bleeding. In such bleedings the major threat lies under the impossibility of detecting the bleeding since it does not come out. Normally they happen after a strong bang. Therefore the patients who get a strong bang and do not have any external bleeding but has the symptoms below should be taken care especially:

- A pale, cold and sweaty skin
- Weak and fast pulse
- Fast and weak respiration
- Restlessness or anxiety that slowly turns into the state of sleep

These symptoms might be seen in external bleedings as well and refer to the seriousness of the patient's general situation. This is known as "shock". In such cases the casualty should be covered with some clothes and the loss of temperature should be eliminated. The legs should be raised 30 cm above and the casualty should be laid on his/her back, medical help should be received immediately.

Nose Bleeding

There are very vulnerable capillary vessels through the inner surface of the nose. Nose might bleed due to a smash or dryness of the weather. The bleedings observed in elders might be the sign of hypertension. These might be stopped by applying continues pressure to the nose (Figure 5.12).

Figure 5.12: Response to nose bleeding.

- Do not lean back.
- The casualty must be sat and the head must be leaned forward.
- The mouth of the casualty should not be closed.
- Cotton should not be used in nose bleeding.
- Two sides of the nose should be squeezed for 5-10 minutes. What is important here is to keep on pressurizing without loosening the fingers.
- If the bleeding does not stop after these treatments then medical help should be provided.

Bleeding From The Ear

It might be resulted from any injuries in the ear and ruptured eardrums due to scuba diving accidents or explosions as well. And also there might be ear bleedings as a result of accidents that might lead to a head trauma like traffic accidents or falling off. In such a case;

- The casualty should be laid downside the bleeding ear.
- The bleeding should not be stopped.
- The casualty should not be walked.
- The casualty should be watched over and 112 should be called for medical help.

Figure 5.13: Amputated limb

Figure 5.14: First aid treatment for the injuries due to foreign objects stucked in the skin.

Amputated limb injuries

In some accidents fingers, hands, arms or feet might be amputated (Figure 5.13). In such an accident the bleeding should be stopped and tourniquet should be applied if necessary.

An ambulance should be called immediately and if the medical help is going to arrive late then the amputated part should be kept cold.

For this:

Put the amputated part into a plastic pack without cleaning (rinsing) and close it to keep dry. Ice and water are put into another pack. The first pack is put into the second pack. Casualty's name and the date are written on the pack.

Injuries due to foreign objects stucked in the skin

Foreign objects like knives, nails etc which are stucked in the skin should not be taken out otherwise it would lead to severe bleedings and new injuries. In such a case keeping the object unmoved by fixing it and consulting a medical institution immediately would be the most appropriate action. This rule covers the foreign objects stucked into the nose, ear or eye as well.

Chest Injuries

Chest injuries take near the first place among the reasons of deaths due to traumas. As a result of the wound on the chest the lungs would fall and death resulting from respiratory distress might be seen. In normal respiration while breathing from mouth and nose lungs extends and when the chest is loosen the air comes out. There is a resorption sound during respiration. Such an injury in lungs might cause death immediately just as in arterial bleeding.

Do not try to remove the stucked objects in the chest to prevent the casualty get worse, try to fix the objects properly to prevent any movement (Figure 5.14).

If there is a penetrating wound on the chest the casualty should cover it with his/her hand to prevent air passing if possible. Cover it with a piece of nylon (a package, aluminium folio etc.) larger than the wound. Attach the three sides of nylon piece to the body with adhesive bandages by leaving the underside open. This would prevent the air pass into chest the chest and would enable the evacuation of the air and blood inside. To provide easy breathing of the casualty get him/her in half sitting position and try to make sure the medical help to patient before leaving (Figure 5.15).

Rib Fractures

Rib fractures happen due to falling off or smashing somewhere. The basic symptom is a pain mainly around the injured part that gets worse with deep breathing. In such a case give the patient a half sitting position so that he/she can breathe easily, place a material (ex: a pullover) that would make the patient relaxed and fix the arm to the body on this side.

Abdominal Injuries

They might happen as a result of smashing or hitting somewhere along with appendicitis, intestinal knot, abdominal inflammation and bleedings. In abdominal injuries the organs in this part might be injured, internal and external bleedings and traumas as a result of them might be seen, intestines might be exposed to air.

In such a case the casualty should be laid back if he/she is conscious. If the injury is across the axis of the body the casualty should be laid down bending his/her legs and if the injury is lengthwise to the body the casualty should be laid down stretching out the legs and the casualty should be covered with a blanket to prevent the

Figure 5.15: Response to chest injuries.

loss of temperature. No food or drink should be given to the casualty, the life symptoms should be checked immediately and medical help should be provided as soon as possible.

If the internal organs are exposed to air do not try to replace them. Cover organs with sterile wet dressings if possible and try to prevent them get dry. The patient must be taken to the hospital by giving the right position mentioned below.

Head/ Spinal Injuries

Unconscious casualties and injuries resulting from falling from a height and car accidents must be accepted as head / spinal injuries. Central nervous system in the cranial cavity might be affected according to the impact of the trauma. In back bone injuries there happens sudden compressions or separations through the spine. As a result of it nervous system might be affected and some undesirable problems might occur. 80% of the deaths in traffic accidents and earthquakes are resulted from head and spinal injuries.

The fractures and/or bruises due to spinal injuries might affect the spinal cord and lead to seizures even death. A millimetric shift within spine cord or a disc displacement is enough for nerve compression. Therefore the casualty of head/ spinal injury should not be moved definitely.

The patient is carried on a hard and plain surface on his/her back. The neck (cervical spines) is supported with a blanket, towel or shoes to prevent any movement. A litter is the most proper carrying equipment if possible.

If the place is not safe the patient should be carried out holding from the ankles (from armpits if not possible) without changing neck-body axis.

Fractures, Dislocations and Sprains

Fractures

The dislocation of bones due to some traumas is called as “fracture”. The risk of a fracture increases with the age. The movement of the broken part might cut the veins or nerves around or injure the muscular tissue. In open fractures there is the risk of inflammation since the skin breaks.

Fractures are mainly divided in two as open and closed fractures:

Open fracture: The broken bone breaks the skin.
Closed fracture: Skin is not broken.

Symptoms of fracture:
- Lose of function within the broken part.
- Deformity.
- Severe pain increasing with touch.
- Bruising or getting cold within the organ as a result of circulation disorder.

First Aid in Fractures

112 should be called immediately. The casualty should not be moved until the ambulance arrives and the fracture should be fixed.

Things to pay attention in fractures:

- Do not try to joint, reshape the broken bones seen through the open wound. If there are bleeding and shock symptoms with the patient along with the fracture first of all they must be treated.
- Avoid from unnecessary movements in that way the damage within tissues is minimized. When a fracture is suspected the fracture treatment is required unless otherwise is confirmed.
- In the open wounds when the skin is broken, the wound must be dressed with sterile bandages to prevent it from external factors.
- After the immobilization step, blood circulation must be checked regularly. In blood circulation control the nail of the fractured organ turning into white when pressured and turning into red after removing pressure is a sign of normal blood circulation.
- To minimize the swelling the wound must be hold above steadily.
- The broken and the immobilized area must be covered with soft materials before (For instance a shirt might be covered over the broken arm or the stick which is going to be used as an immobilization material might be softened with a shirt.).
- The wounded area must be immobilized in the same position how it is found, trying to give a shape might increase the damage.
- The immobilization of the wound must cover the upper and the lower joints of the broken or dislocated organ.

First Aid in Finger Fractures

The broken finger is wrapped with a piece of wood in a finger width or with a narrow aluminium strip (brace). The broken finger is fastened to the other finger with a plaster or bandages if necessary.

- The facture should be kept above the heart level.
- Ice should not be put on the wound.
- If there is a ring on the finger it should be cut out.
- The casualty should be taken to hospital.

Figure 5.16: Treatment for arm fractures.

Figure 5.17: First Aid in Scapular Blade and Collarbone Fractures.

Arm Fracture

In an arm fracture a role of newspaper, magazine, carton etc would be placed in the arm and dressed with bandages so that the fracture is fastened (Figure 5.16). The forearm is fastened to the neck with triangular bandages or a piece of clothe.

Do not put ice on the fracture, remove any bracelet, watch or ring. The broken arm is checked for pulse, temperature and colour frequently.

First Aid in Scapular Blade and Collarbone Fractures

A roll of cotton or clothe is placed under the armpit on the broken side, and the arm is fastened to neck with a piece of clothe or rag (Figure 5.17). Some ice is put on the broken part.

The casualty is given the sitting position and taken to the hospital. If there is not any triangular bandage or dressing then the injured hand might be placed between the buttons of the jacket and pinned there.

One side of the dressing over the shoulder is passed under the other armpit and fastened there. The same thing applied to the other side and the corners of the dressing are knotted together. While doing these the shoulders are pulled back.

Leg Fracture

In the leg fractures the leg should be immobilized including the previous and the next joints. For this long pieces of sticks or thick blankets might be used. When there is no material available then the steady leg might be used to immobilize the fracture. Placing rolled dressings or blankets might be useful for this treatment.

Immobilization of leg fractures are very important therefore medical personnel must be waited when there is no requirement. If the immobilization is necessary then materials especially like sticks and bandages might be required (Figure 5.18). If there is one piece of stick it should be placed outside the leg and if there are two sticks one of them should be placed inside and the other one outside the leg. There must be 8-10 cravat bandage and they should be tied to the leg passing under ankle and knee. The sticks should be tied to the leg properly with all the knots looking outside. After fixing process the fracture should be checked for circulation regularly. The mobilization step continues with fastening the broken leg to the steady one.

Figure 5.18: Mobilization of broken leg.

First aid in hip fracture

Pillows or blankets are placed between to legs as a packing material and the mobilization is done by tying two legs together (Figure 5.19).

Figure 5.19: First aid in hip fracture

Dislocation

A "dislocation" is called as the injury which forces bones out of their sockets due to an external impact. It might happen due to a reverse or forced movement.

The most common symptoms in a dislocation:

- Deformity within the joint and the shape of organ.
- Difficulty to move or motionless due to the pain.
- Tenderness and swelling.

In a dislocation case the casualty must be taken to the hospital.

The role of the first aider in a dislocation case is to immobilize the injury until the medical help arrives. For this, treatments like making an arm sling and fixing it to the body might be applied.

Figure 5.20: First aid in ankle sprain.

Sprains

The stretch or tear of ligament connecting bones due to a reverse or forced movement is called as "sprain". Pain,

tenderness, swelling or bruising might be seen on the joint part. A pack with ice should be placed on the sprain to prevent swelling and it should be fixed with elastic bandages (Figure 5.20). A medical institution should be consulted without using the joint and elevating it.

Burn Problems

Different treatments are required in burn cases depending on the degree and the size of it. The aim of first aider is to remove the material or the source that causes the burn. If the casualty's clothes catch on fire he/she should not run and roll on the floor and the casualty should be covered with a blanket. Since the skin might get damage the burnt clothes should be removed by cutting.

Burns vary from simple sun burns to the third degree burns resulted from open flames or electricity. Different burn types and treatments are given as it follows:

1st Degree burns: Generally resulted from hot water or sun. They cause redness, pain and swelling on the skin. In the treatment of a simple burn first of all cooling method should be applied. Run cool water over the burnt area at least 10 minutes if possible, or the burnt area should be kept in a basin filled with cold water. If it is not possible
a compression with a clean towel might do the same work as well. Cooling the burnt area reduces the pain and the swelling. If there are objects like rings, bracelets that might put pressure on the burnt area should be taken off before the limb starts swelling. After the cooling process moisturizing creams might be applied to the burnt area and it might be covered with bandages gently.

2nd Degree burns: Boiled water, stream and sometimes sun may lead to second degree burns. In these types of burns burn extends deeper, the skin gets redder and blisters might develop on the outer surface of the skin. Squeezing these blisters is highly damaging. The burnt area is an open wound and is under inflammation risk if proper treatment is not applied. The burnt place must be cooled by holding under water immediately (first 10 minutes are very important). Do not apply any creams or materials over the affected area. But if there are wet burn gauzes in the first aid kit they might be applied. Dry clothes should not be used since they would stick on the burn. If the burnt area is small the casualty should see the doctor. But if the burnt area is big or close to the airway 112 should be called for help.

3rd Degree burns: Direct exposure to flames or hot materials lead to third degree burns. Skin is completely burnt; the burn extends to the nerves, veins and even muscles and bones. 1 and 2 degree burns are seen around the burnt area. Since the

nerves are destroyed there might be no pain. This type of burn is life threatening due to dehydration. And the risk of inflammation should not be forgotten. 112 must be called in these cases.

Heat Stroke

It is the case that is also known as "sun stroke" due to excessive exposure to the sun. the casualty may have over sweating and the body temperature may be greater than 40 degrees. The casualty may be unconscious and have rapid heartbeat. There may be excessive thirst, dryness of the mouth, tiredness and pains as a result of heat stroke.

If the casualty is unconscious basic life and support precautions should be taken immediately. If there are the signs of respiration and circulation then the casualty should be taken to a cool and shadowy place and an ambulance should be waited in coma position. The casualty should not be made drink anything in the meantime.

If the casualty is conscious remove him/her to a cool and airy place and lay on his/her back elevating the feet 30 cm. Casualty's clothes should be taken off and the body temperature should be decreased with wet towels. In order to regain the salt lost through sweating salty drinks like soda or ayran should be given to the casualty. But no alcoholic drinks should be given to the casualty. Taking a warm shower may be good for the casualty when he/she regains the consciousness.

Cold Injuries

They appear when the casualty exposes to cold air for along time. Tiredness and sleepiness might be the signs. The first effected organs are feet, fingers, ears and nose. It is first seen as the redness of the skin and the increasing pain with movement. The movements of the casualty get slower. Then the frozen body parts turn into white colour tighten and get cold. At this stage blisters may develop as in burn cases, they should not be squeezed. At the last stage of cold injuries there may be lose of sensation and the colour of the frozen organ becomes darker.

In cold injuries robbing with snow or piece of clothes, massage, putting into warm room or hot water, dressing, applying several pomades, giving alcohol or cigarettes is very wrong treatments.

The aim of the first aider in a cold injury is to remove the casualty's wet clothes and keep the body dry. The casualty should be covered with blankets to warm up the whole body rather than trying to warm only the frozen part. The warming up process must be slowly and gradually.

Figure 5.21: Bee sting treatment.

If the casualty is unconscious no liquids should be given from the mouth. If the casualty is conscious then it is better to give warm and sweet drinks.

Animal bites

Animal bites or any touch with them are considered as serious injuries since they have the risk of infection and serious allergic reaction.

As the basic first aid procedure in animal bites:

- The wound should be washed with antibacterial soap and running water.
- If there is an open wound dress it using sterile bandages.
- Medical aid must be sought immediately.
- The casualty should not be moved or made walk.

Bee sting

5% of people are allergic to bee stings. Ambulance must be called for those who are allergic, stung by many bees or stung close to the windpipe (inside the mouth, face, neck) or medical help must be sought. The pain and swelling might be reduced by putting ice to the injured area (Figure 5.21).

There might be redness, pain, itching or swelling over the injured area. If the stinger is still on the skin it is removed properly.

Snake bite

There are pain, swelling, bruise and tenderness over the injured area in snake bites. The wound must be washed with soap without moving it. Cutting into the wound would lead the venom get into blood circulation easily. And sucking the wound is of no use as well this would even make the other person get the venom.

Things to do in snake bites are these: apply cold compression and keep the wound below the heart level. The wound must be covered with an elastic bandage that would stop only the lymph circulation. The casualty should be laid down without any movement and sent to the hospital.

Scorpion Bites

Some pain or numbness is felt over the wound in scorpion bites. The respiration might get worse. In this case the wound should be washed and cooled with ice. The casualty must be laid down without any movement and sent to an emergency service. The first aid treatment is the same as snake bites.

Marine species

Marine species The sting or bite of marine animals is not very serious. There might be pain, swelling or numbness through the wound. There is the risk of infection. If the wound is close to the airway then it might be very dangerous.

The wound must be cleaned with water and soap. The casualty must be sent to an emergency service without moving him/her. Since there might be swelling in all animal bites, the objects like rings, bracelets, watches etc should be removed beforehand.

Eye injuries

Since eye has a very vulnerable form, in all periods of live especially in childhood it may be easily affected from traumas due to external impacts and foreign objects. There might be vision lost when the required treatment is not provided on time in eye injuries.

The first aid treatment for an injured eye must be applied by taking into consideration the conditions and the seriousness of the wound. In the injuries of serious body traumas first of all basic life support should be applied and then treated to the eye. Foreign objects like dust, eyelash, debris, piece of metal or glass may lodge itself in the eye or get under eyelids. If not taken out they might lead infection. In such cases the casualty should be avoided rubbing the eye. The casualty is provided not to blink and keep close the eyes for 1-2 minutes. This would increase the lacrimation and the foreign object might be removed itself. If the foreign object is on the pupil or iris it should not be removed or touched!

If you think that the foreign object is not on the pupil or iris;

- Seat the person in a well lighted area. Open the eyelids gently with your thumb and forefinger and look at the lower eyelid.
- Tell the person to look left-right and up-down. Examine the foreign object carefully.
- If you can see the foreign object, wash the eye under running water.
- If there is no water and the foreign object does not lodge on the eye, take it out with a clean wet handkerchief or a wet cotton bud carefully.

- Take the foreign object out by moving it opposite the pupil and iris.

If the foreign object is on the pupil or iris and deeply stucked do not move the patient unnecessarily. In such a case a gauze bandage must be placed on the eye and the patient must be hospitalized immediately.

Identifying the foreign object in eye injuries is very important. Especially alkali burns resulted from unslaked lime etc may cause vision lose by developing a permanent scar on cornea. In such a case the foreign object must be removed from the eye, eyes must be open and the washing process must be done in the first thirty minutes and the casualty must be hospitalised.

Wound Care

In disasters and the cases where it takes time for medical help to arrive the first aider must know the wound care very well and watch over the casualty all the time. A wound can be defined as the deformity of tissues or the destruction of them. In open wounds there is the absence of skin. The tissues that have been under skin so far are now expose to air. Cells and the tissues are affected negatively from this situation. If not covered with skin immediately many negative factors would prevent the epithelising.

When it is an open wound the first thing that comes to mind is the risk of infection. The most negative factor that prevents epithelising is infection, because an open wound without any microorganisms is unacceptable.

The rules to follow in wound care:

- First of all necessary equipments (gauze bandage, water, soap, plaster, scissors, bandages, sterile isotonic liquids) must be made ready or provided.
- Gloves must be used to avoid germs from the wound and for the first aider personal health. The gloves used and the working conditions must be sterile if possible.
- If the wound is washing then a compression must be done with a gauze bandage. Five minutes compression may stop the bleedings in a great deal.
- Dirty wounds must be cleaned with water and soap.
- The wound must be examined for foreign objects (glass, pieces of stone, sand etc.). Big and stucked objects should not be moved from their place. If there are small pieces they must be removed with a gauze bandage if possible.
- No medicine or pomades must be applied on the wound.
- The air contact of the wound must be stopped therefore it must be covered if possible. If the wound is bandaged then the dressings must be changed in at last every 24 hours to prevent infection.

- If the wound requires stitching (the cut is deeper than 2-3 cm and the corners are not joining), is very dirty and deformed, cover it with a gauze bandage avoiding from any touch and get medical help.
- Materials like cotton, tissues or napkins that would leave fibres on the wound and lead to infection should not be used in wound care. Chemicals including alcohol and iodine should not be used in wound care. Antibiotic creams and powders should not be used since the patient would be allergic to them or they would delay the healing.
- If there is a long term wound care then only isotonic NaCI solution (normal saline) must be used.

Materials required for wound care:

- 0.9% NaCI solution (normal saline)
- Absorbent (hydrophil) sterile gauze bandage – Petrolatum impregnated gauze bandage
- Sterile gloves
- Bandages

Wound care treatment

- First the sterile gloves are put on.
- Sterile gauze bandage is impregnated with normal saline. And the wound is gently cleaned off the solid or liquid wastes without crumpling the tissues. This treatment is repeated for a few times with new gauze bandages and pets.
- Petrolatum impregnated gauze bandage is put on the cleaned area. The vaseline gauze bandage is wetted and wringed so that it prevents the gauze bandages placed on the wound to get dry and stick to the wound and make it easy to put off the dressings.
- Hydrophilic sterile gauze bandage is impregnated with normal saline. It is wringed and the extra water is taken. Those absorbent gauze bandages placed on the wound. It is paid attention that the bandages fill the whole surface of the wound and cover the wound as much as possible.
- Dry gauze bandages are put on the damped and wringed gauze bandages. They are dressed with bandages by fixing them on the wound.
- These dressing must be repeated regularly (4 times a day) for the wound with gleet.

Triage

The aim of the triage in disasters is to save the maximum number of casualty in a very short time and with available sources. The most common triage model used in the world now is START model (Figure 5.22).

START model is mainly thought for the first aiders and/or search and rescuers rather than professional healthcare staff. But it is recommended to the healthcare personnel when they are a few in number. When the number of the rescuers is equal to the number of the casualties there is no need for triage the response process may start immediately. The first rescuer should take the responsibility of triage. The starting point of the triage – if the scene of event is safe- is the place where the rescuer first enters.

Rescuer starts classification with the casualty closest to him/her as a rule to use the time effectively. Triage time must be less than a minute for each casualty.

The rescuer gives each casualty a colour during the triage process. No time must be wasted with filling forms. The required documents for the casualty are filled by the personnel after the treatment. The rescuer should not start the treatment of the patient in serious condition during triage. This means risking the lives of other casualties so the treatment is no longer a triage.

In big areas or mass-casualty incidents more than one rescuer might perform triage by sharing the scene. After finishing triage the rescuer may response to the casualties with red mark if there are not enough rescuers after him/her.

There 4 different colour codes in triage:

Black: Dead or unlikely to survive.
Red: The casualties require immediate medical attention. Those who need urgent medical care or transportation are in this group.
Yellow: Although they have medical problems they can wait longer than the RED group.
Green: They are conscious and slightly injured. Some of them may help the rescuer as well.

It should not be forgotten that the medical condition of each casualty may change in a short time and they may be included in a different triage colour code. Especially casualties in YELLOW and GREEN groups must be assessed regularly.

The criteria used in START system is this:

- Respiration
- Circulation
- State of conscious

Identifying the GREEN code: While starting triage the rescuer calls to the place, "Those who can hear me and walk come here". Those who can do this are temporarily coded in

GREEN. That does not mean the other criteria will not be applied to these people. But the respiration, circulation and consciousness of the casualties with **GREEN** code are done after assessing other victims. It should be remembered that there might be people who would be coded as **YELLOW** or **RED** among those coded as **GREEN** at first after performing triage.

Identifying the **BLACK** code: The airway of the casualty is opened with head tilt-chin lift position and the respiration is assessed with "LOOK-LISTEN-FEEL" method during 10 seconds. If there is no respiration the process is repeated once more. If still no breathing the person is coded as **BLACK**.

Identifying the RED code: If the respiration is normal or started after head-chin position, the breathing rate is assessed. If the breath rate is above 30 per minute the casualty is coded as **RED**. If the breath rate is below 30 per minute that the circulation is checked. Help might be get around the people to keep the air way open for the casualties in this condition. There are two different criteria used in circulation assessment in international area: Capillary nail refill test and radial pulse.

In capillary nail refill test pressure is applied to the nail bed and then removed. If the area turns in white to pink longer than 2 seconds the casualty is labelled as **RED**. If this process happens in 2 seconds then the casualty is checked for consciousness.

Radial pulse is a method which is not generally preferred since the people except for medical personnel have difficulty in finding and feeling the pulse but still it is mentioned in some resources. In this method if the radial pulse is not felt then the casualty is labelled as **RED**. If there is radial pulse then the next step CONSCIOUS CONTROL is applied.

Help might be get from the people around for the casualties with severe bleeding. Conscious control might be done at the same time with respiration and circulation control. In this phase the casualty is observed whether he/she can answer the questions logically or understand the simple directions. If the casualty can not answer or follow the directions than he/she is labelled as **RED**. Otherwise the code colour is **YELLOW**.

Normally the conscious control is the priority of first aid treatments whereas it is the last criteria in START method. Because a casualty who can answer the questions and follow the directions is liable to be coded as **RED** in disaster triage, this fact might escape the attention.

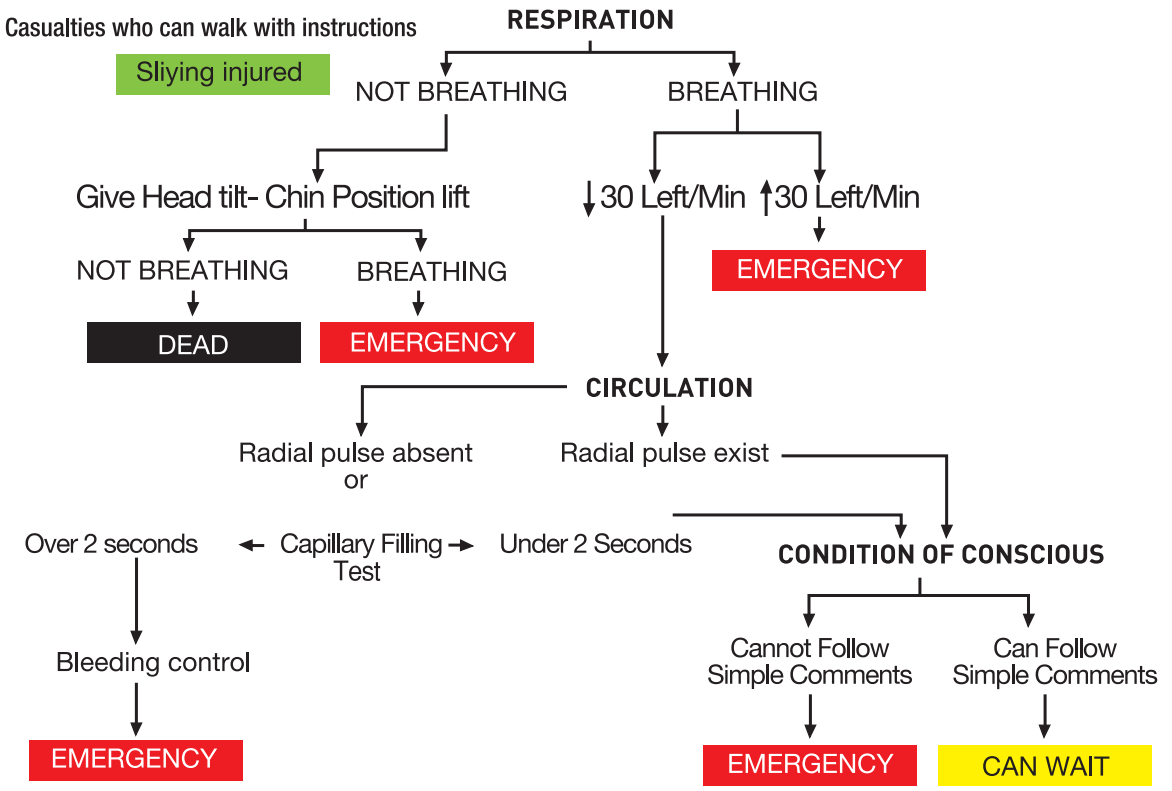


Figure 5.22: Triage table.

VI. DISASTER PSYCHOLOGY

Psychosocial Support and Intervention in Disasters

Psychosocial support can be defined as all the planned and structured services during all the stages of a disaster cycle, including preventing psychological distress/disorder after any disaster, establishing social relations at the levels of the family and a society again, enabling disaster survivors to be aware of their own capacities while returning to their normal lives. This support enables individuals to cope with the aftermaths of disasters and emergencies and also helps them get over these kind of events by using their own resources.

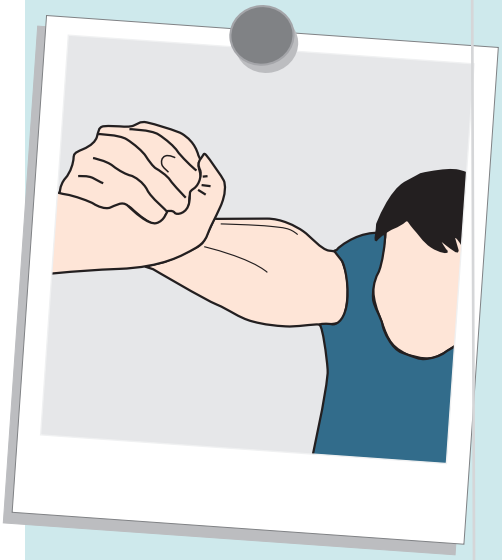
Psychosocial response during disasters includes some interventions aiming to accelerate these processes. This can be exemplified as facilitating the disaster survivors to return to their own pre-disaster living conditions and increasing such abilities as getting better, gathering strength, coping and intervention by using their capacities. It also includes psychosocial support to disaster workers and teams.

Fundamental Principles of Psychosocial Responses

- In psychosocial response the disaster survivors need to be taken as strong individuals who can manage to survive after the disaster, rather than passive victims.
- In all support activities it is important to focus on developing the capacity of disaster survivors and providing continuity of given services.
- Focusing on the protection and rebuilding of social bonds by taking into consideration cultural, political and religious structures and ethnicity during all the responses.
- The interventions need to maintain social relations and develop the coping capacity and skills for dealing with problems.
- Decision making about problem definitions, aims and methods for solutions needs to be taken together with disaster survivors or the representatives of this group and full participation needs to be obtained.

- In interventions it is important to establish clear and reliable information flow, make it accessible for the target groups and maintaining the flow.
- Emphasizing that such reactions as psychological, physiological, mental and behavioral are normal reactions given to an abnormal condition after disasters.
- Assessing stress factors and coping skills and what the psychological condition of an area is after a disaster and how it is destroyed with the disaster is needed for planning the psychosocial responses matching the needs of disaster survivors.
- Primarily, providing such basic needs as sheltering and nourishment are considered first in the planning of psychosocial responses.
- Paying attention that those who receive help are not stigmatized in their communities.
- Giving priority to team personnel, local personnel and volunteers in psychosocial training programs in order to reach the ones needing help easily and swiftly. If these individuals learn how to cope, they can help both themselves and other disaster survivors.
- In psychosocial programmes the local workers, local organizations and volunteers are valuable in providing reliable information about the priorities, anxieties and needs of local communities.
- Not using the information from psychosocial responses of disaster survivors during the initial periods after a disaster (acute period), for scientific research.
- Paying attention to give information about coping with stress, communication with disaster survivors, self-care and similar information to help teams who will be involved in psychosocial practices during disaster in the preparedness period.

The Stages Of Response For Communities Exposed To Earthquakes And Similar Natural Disasters



The Reactions and Their Stages Observed in Societies After A Disaster

It is useful to have some knowledge about the stages through which communities react after disasters for disaster workers. These stages and their features are different as compared to individual reactions to disasters, which will be presented in later parts. These stages are:

Heroic Stage

This stage is a stage that includes activities such as rescue, temporary settlement, first aid and cleaning performed by individuals and a society directly, in a disorganized and uncoordinated fashion. This stage starts in the first few hours after a disaster event and lasts for the first two or three days.

Honeymoon Stage

During this stage, both the community and the survivors are optimistic. The support and legal attempts of media, government authorities, internal and external resources, help organizations, nongovernmental organizations are very intensive during this stage. However, usually after three weeks the support, interest and concern starts to decline seriously in comparison with the first days of a disaster. Optimistic ideas that disaster survivors have at the beginning, disappear remarkably in the later parts of this stage.

Disillusionment Stage

During this stage, disaster survivors become aware of the inadequacy of help organizations, the insufficiency of government support, and the withdrawal of internal and external helps. They are also aware that they need more help in order to reestablish their lives but the support provided is inadequate. Sheltering problems become more pronounced

as the time progresses. This stage usually starts after 2 days after a disaster and lasts approximately 3 months.

Restabilization Stage:

This is a stage in which long term sheltering and work problems are resolved. Individuals adapt to the changes in their life styles and gain experience in this stage. This stage starts approximately 6 months after a disaster and lasts on the average for 36 months.

Who Are Affected from Disasters?

Individuals affected from an earthquake and such like disasters constitute a large group. There are four different types of disaster survivors after an earthquake and such like disasters. These can be listed as follows:

Primary survivors: These are the individuals residing in an earthquake zone and they directly experience the earthquake.
Secondary survivors: These are defined as individuals who have a family bond or a personal bond with primary survivors.
Tertiary survivors: These are individuals who provide services and carry out duties because of their locations after an earthquake and such like disasters.
Quaternary survivors: These are individuals who are exposed to an earthquake and such like disasters through the media.

The General Reactions Of Individuals After Disasters

The general reactions of survivors after disasters can be analyzed under five titles. These are emotional, physical, cognitive, behavioral and social (interpersonal) reactions. These are normal reactions given to an extraordinary condition. Individuals should know that these are normal reactions and this normalization process has an important place among the principles of first aid.

Emotional Reactions:

Shock, anger, helplessness, feelings of emptiness, numbness, extreme fear state, guilt feelings, mourning, hopelessness, nervousness, pessimism, disassociation, feelings of worthlessness, panic and shame are emotional reactions after natural disasters.

Cognitive (thoughts and the thought processes) Reactions:

The cognitive reactions of disaster survivors are concentration problems, difficulties in decision making, memory problems and/or amnesia, having false beliefs (for example; 'It was all my fault'), confusion/dysregulation in thoughts, distorting/altering experiences, having no self esteem, self disenchantment, self accusation, having undesirable and unavoidable thoughts and memories.

Physical Reactions

Fatigue/exhaustion, sleeplessness, disruption of regular sleep routine, hypersomnia, insomnia or inability to sustain sleep, uneasiness, widespread aches, headaches, decline in sexual desire, loss of appetite, immune system disorders, stomach and intestinal problems, tension, palpitation, nausea, dizziness and chest pains are common physical reactions among disaster survivors.

Behavioral Reactions

Avoidance of stimuli reminding earthquakes, fidgeting and sudden jumpiness are among the behavioral reactions of survivors.

Social (interpersonal) Reactions

Alienation, social withdrawal, interpersonal conflicts and problems in relations (family, work, school, marriage), mistrust, suspiciousness, being judgmental and accusatory are social (interpersonal) reactions seen among survivors after disasters.

It has been shown that survivors may show different reactions after earthquakes and such like disasters. This variation is related to the differences in the severity of their trauma exposures, how they interpret the event and their personal backgrounds.

Disasters/traumatic life events are extraordinary life conditions faced by individuals. From this point of view, the reactions given below are normal psychological reactions. These normal reactions can be analyzed in various stages after a disaster period. The stages and reactions undergone by individuals after a traumatic event and/or a disaster can be generally described as follows (Karancı, A.N., 2008):

Shock Period

It can be described as a protection against an experience that poses a threat on the limits of the person. During the first 24 hours and may be a little longer period, the following reactions may be seen in disaster survivors:

- Physiological arousal
- Sensivity in perceptions but also narrowed perceptions
- Not being able to think logically and difficulties in making decisions
- Difficulties in focussing attention and memory
- Seing everything as unreal (disassociation)
- Blunting of emotions
- Not feeling pain
- Shock
- Some might show panic and freezing reactions (20%).

Reaction Period

It is a period in which individuals become aware of what has happened and what this event means for them. It appears approximately 2-6 days later after a disaster. During this period, the individual starts to feel safe and becomes aware of all the things that has happened. General reactions during this period are as follows:

- Emotional chaos: Anxiety, fear, anger, nervousness, hopelessness, helplessness, sadness, guilt feelings, shame, mistrust, feeling lonely and detached from real life
- Somatic/Physiological reactions: Tremor, nausea,

cardiac problems (such as palpitations) muscle pains, dizziness, fatigue, fidgetting, sleep problems and appetite changes
- Avoiding stimuli that remind them of the disaster
- Repetitive thoughts and images (flashbacks) related to the disaster
- Terrifying and frightening dreams and nightmares

All these reactions are very terrifying and disaster survivors may get frightened and they may even think that they are loosing their sanity. The use of sleeping pills, tranquillizers, cigarette and alcohol might increase during this period. But these are not healthy methods to cope with disaster distress.

Processing Period

A traumatic experience should be processed. In other words, experience and its emotional, cognitive and behavioral reactions should be reviewed and given a meaning. A disaster survivor should be able to put a distance between him/her self and the event. General reactions during this period are as follows:
- The disaster survivor no longer wants to talk about the disaster.
- They mourn for the ones they have lost.
- Processing (thinking and evaluating the disaster) continues internally.
- Strong emotions such as sadness and yearning can be felt.
- Memory and attention problems may occur.
- Problems in interpersonal relations, nervousness and conflicts, temper outbursts for external resources/individuals can occur.
- They want to be left alone and they may not be absent in their environment psychologically.

Rehabilitation/Reorientation Period

Disaster survivors start to make plans for their futures and the severity of their reactions declines during this period. General reactions of this period are as follows:
- The disaster survivors start to accept what has happened.
- The severity of reactions are reduced.
- The disaster survivors start to show interest in daily living matters.
- They make plans about their futures.
- They feel better emotionally.
- The event of disaster/trauma becomes a part of their lives, but it does not preoccupy their minds.

However, time is needed to process what has happened. Using coping methods such as denial, repression and avoidance after a disaster and/or having to return to work without being ready may hinder the processing and giving meaning tasks. Under these circumstances the survivor may get stuck in certain periods and psychological problems that might affect their future life may occur.

We should not forget that these stages and the reactions in them are normal reactions given to an unusual experience. However, some disaster survivors may have difficulties in going through the above described stages successfully and they can develop an anxiety disorder which is labelled as the Post-Traumatic Stress Disorder (PTSD). This condition results from being exposed to an event which threatens the life or physical integrity of an individual or witnessing such as an event happening to someone else and responding to the event with horror, helplessness and extreme fear and the inability to process and give meaning to the event.

Research has shown that certain demographic characteristics (for example; being a woman, low education and income) before a disaster/trauma, having previously experienced another traumatic event, having a psychiatric disorder and certain personality traits (for example; emotional inconsistency, pessimism, lack of self esteem) creates a vulnerability to develop PTSD. In other words, some people have a higher vulnerability for PTSD. Furthermore, the type of a disaster/traumatic event is also associated with the likelihood of PTSD. Sexual and physical abuse or violence, in other words, man-made, intentional traumatic events are more likely to lead to PTSD (Karancı, et al., 2009).After earthquakes, psychological problems other than PTSD, such as depression, anxiety disorders, drug abuse can also occur. The model of Parkinson (2000) gives schematically the variables that may be related to psychological reactions to disasters (Figure 6.1).

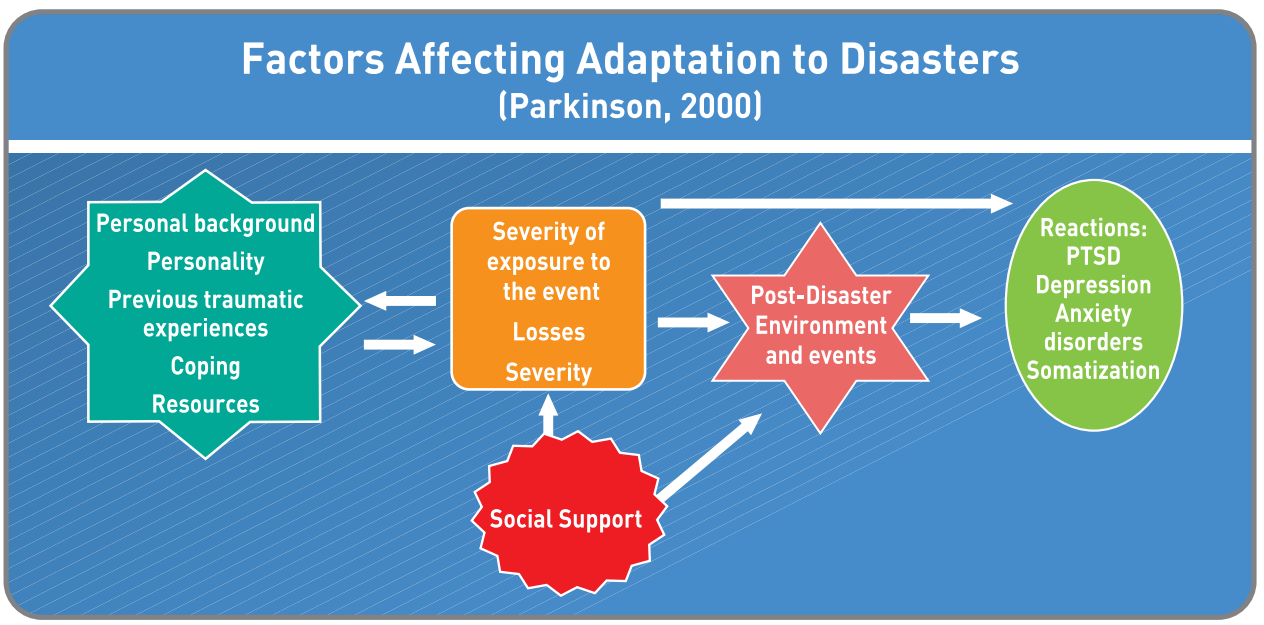


Figure 6.1: The variables related to psychological reactions.

The effects of disasters depend on the characteristics of an individual before a disaster and how severely the disaster has been experienced. Furthermore, as it is shown in the figure, the problems in the post-disaster period and context can also affect psychological reactions.

Social support has a protective factor for both coping with the effects of disasters and also increasing self esteem. In this regard, giving social support to disaster survivors and enabling them to get in contact with their friends and relatives is a significant first aid principle.In the following part, the features of PTSD will be presented. Knowing these features are important in terms of understanding the problems of disaster survivors and referring them to experts when necessary.

The Reactions of Children, Adolescents and Elderly After A Disaster

Research has shown that children and adolescents are in the high risk group in terms of being affected from disasters. Children, like adults experience such reactions as reexperiencing the event, emotional numbness, avoiding stimulus that reminds of the disaster and physical arousal after a traumatic event. However, children can be at a higher risk after a traumatic event because their coping strategies are not yet as developed as in adults. The traumatic reactions of children and adolescents vary depending on the developmental features of different age groups. Furthermore, it has been found that the reactions of children are much affected from the reactions of adults (mother-father-adult care giver). The reactions of children and adults are these: regression (exhibiting behaviors that they engaged in younger ages), mistrust, excessive overinvolvement with parents, guilt feelings, fear, anxiety disorders, emotional and cognitive chaos, hallucinations, delusions (developing delusions), weird supernatural thoughts, images, catatony/freezing (an individual staying without moving in a certain posture and not responding to any external stimilus).The reactions of children according to their age ranges after a traumatic event and the psychological support that should be given, can be listed as:

The Reactions of Preschool Children To a Trauma (0-6 age group)

For the babies and preschool children, it is important to

meet their needs and to give them a sense of trust. For this reason the support and tenderness of parents or adults in the post-disaster period is very important. The daily routines of babies should not be changed and kept the same as much as possible and it is also very important to be pay attention to the physical health of babies. For the 3-6 age group of children it is very important that families return to their normal routines as much as possible and make their children feel safe (Erden 2000). It is very to answers the questions of children in a truthful manner in order to enable them to give meaning to the circumstances. During this process of explanation, it is going to be useful to support such activities as playing games and drawing pictures. Necessary materials for these activities need to be provided. The child will have the opportunity to express his/her feelings through these activities.

In this age group, after traumatic events reactions such as crying frequently, sleep problems, nightmares, restlessness and loss of appetite can be observed . Such problems as excessive attachment and overinvolvement with parents and unwillingness to seperate from them, a return to behaviours they exhibited in earlier ages (for example: enuresis or thumb sucking) and speech disorders (like stuttering) can occur. They may also have bad temper, obstinacy and anxiety. Such problems as verbal compulsions (they use some words related to the trauma much more or they do not use them) can also occur. Egocentric approach of preschool children can lead them to hold themselves responsible for an event,

The Reactions of Children Between 6-12 ages to a Truma

Helplessness, passiveness, generalized fear, cognitive chaos, difficulty in expressing emotions, regressive behaviors, speech disorders , sleep disregularities , worry (for himself and others), anxiety about death , blaming self for the disaster and guilt are some of the reactions of this age group. They are afraid of the direct or indirect reminders of the event. Playing games and telling stories about the event, dysfunctions in concentration and learning, mistrust, changes in behaviours, common somatic complaints, watching the anxiety reactions of parents and mourning reactions can be included amongst the psychological anxiety symptoms after traumatic experiences during this stage too.

The support of their families and other adults around them has a great importance for the children in this age group. The parents can provide psychological support by repeatedly giving explanations about the event, by helping them in identifying their emotions and by giving them consistent attention and care. They should also establish an environment in which their children can express their thoughts and their imaginations in order to give meaning to the event. Showing consistent interest, enabling them to understand the event, giving realistic information, enabling their children to control their impulses and stimuli, supporting them to establish a connection between their emotions and the event, providing creative and positive activities and making them get involved in these activities, making relevant explanations about death and enabling their children to remember and

to talk about their positive memories are among the things that should be done by parents for providing psychological support for 6-12 age group children.

The Reactions of Adolescent Children To A Trauma:

Changes in sleep routines and appetite, problems in schools performance and peer relations, decline in concentration, physical complaints, rebelliousness, lack of energy and apathy are among the psychological symptoms of children in this stage. They feel guilty and reflect this in their behaviors and display behaviours that may be threatening to their lives. Also feelings of revenge, radical changes in attitudes, early transition adulthood and sudden changes in relationships can be listed as the reactions of adolescent children.

In order to provide psychological support for the children in this age group, we should discuss the event, their emotions and feelings and provide opportunities for them to talk about the event. Adolescents need to be responded to with mature and moderate reactions. We should also enable them to make contact between their behaviours and the event and to express impulses which may otherwise lead them to take risks and behave thoughtlessly. We should give a chance to them to reveal their thoughts and think about probable results. We can make a cost-benefit analysis and support them to understand possible difficulties and tensions. Furthermore, emphasizing the need for delaying some radical decisions is necessary for psychological support.

The Reactions of Elders (65 age and over) To A Trauma:

Another group evaluated as being a high risk one are the elders (65 age and over). Elders, like children and adults experience such reactions as reexperiencing the disaster event, emotional numbness, avoidance of reminders of the trauma, physical arousal reactions. This group is considered to be at high risk because these symptoms can be a sign of the deterioration of their functioning and the worsening of their physical and mental problems.

Such problems as the feelings of insecurity in daily life, hopelessness and death anxiety, extreme distress, lack of coping skills may be more pronounced in this age group.

The Reactions of Workers Responsible For Providing Services in The Disaster Area, Medical Staff, and The Members of Nongovernmental Organizations in Disaster Areas

For the individuals in this group the risk of being negatively affected from traumatic events increases for the young ones and those with little experience in the disaster areas. Also, the ones having previous traumatic experiences are at higher risk for negative reactions. On the other hand, for those who are experienced in working in disaster areas, and those who are trained and prepared beforehand the negative effects are less. The reactions that

are seen among these individuals who provide assistance during disasters are as follows:

- Apart from the stress of the disaster area, feeling obliged to take on many tasks simultaneously with their own tasks.
- Stress and chronic fatigue becoming part of their daily lives.
- Feeling sad and guilty due to the feeling of inadequacy and not performing their tasks well.
- Feeling embarrassed and guilty by comparing their own conditions with the conditions of survivors directly affected from the disaster and their acquaintances.
- Making excessive identification with the conditions of the disaster survivors.
- Feeling depressed, angry and helpless.
- Feeling uncertainity and confusion about their jobs and responsibilities.
- Hypersensitivity or excessive insensitivity.
- Being exposed to the anger, ungratefulness and accusations of disaster survivors and feeling distressed.
- Feeling burnout as a result of these.

The main reasons causing burnout in this group are being subjected to excessive workloads, having no supervision and control over their work, inadequate rewarding, unfair treatment from others, not feeling part of a group and being exposed to value conflicts. It is important for individuals to be aware of early signs of burnout in order to protect themselves and identify these symptoms before the feeling of burnout takes over. These prodromes are being disappointed in ideals, developing a pessimistic and ironic point of view, thinking that their value is not appreciated by their organizations, the feeling of mistrust against workmates and authorities, losing their ambition and enthusiasm about their work, decrease in productivity and attaching too much importance for their own value and seeing themselves as essentials.

Psychological First Aid

Psychological first aid is an intervention aiming to help individuals cope with difficulties and to minimize the negative effects of disasters. Psychological first aid includes protective responses that are performed with the aims of minimizing negative influences of extraordinary conditions

such as a disaster, accident or a sudden illness on individuals, helping individuals to cope with such circumstances and to return to their normal lives.

The principles, aims and methods of this approach are formulated by experts around the four principles listed below:

- Explaining the psychological and physiological symptoms of individuals who have experienced the event and the methods of healing based on research results.
- Being practical and applicable in the environment where the event has occured.
- Being suitable for individuals from every age and gender who have experienced the event.
- Being culturally appropriate and flexibly applicable.

Psychological first aid, as different from other psychological approaches, is a protective approach which is not performed with the aim of treatment after disorders but it is performed in environments where events have occurred and before disorders progress as a protective measure. Another difference from other psychological approaches is that an expert health personnel is not necessary to perform them. It is a type of emergency approach performed during the first 72 hours after a disaster in order to protect the psychological state of individuals. Five basic psychological first aid principles are developed and accepted by scientists. According to these principles, the basic tenets of psychological first aid are as follows:

- Assuring and calming
- Enabling sharing
- Normalization (the recognition of possible reactions)
- Returning ito normal life and making social support resources available
- Minimizing negative events after disasters
- Informing
- Encouraging the participation of disaster survivors in decisions and tasks and giving the feeling of control
- Assessing to screen for those who may need professional help

These basic features are given in various stages after disasters with the following principles:

- Giving sense of safety
- Calming
- Encouraging self-efficacy and social efficacy feelings
- Improving sense of attachment with others
- Instilling hope

The necessity of taking into consideration these principles within every stage of psychological first aid after a disaster has been recommended (Hobfoll and his friends, 2008):

Protection: Survivors need to be directed away from dangerous situations immediately. Since, the less disaster survivors see, smell, hear and feel the stimuli that can cause damage the less they will be affected.

Direction and Guidance: Disaster survivors may not be able to think logically and clearly and can be shocked or can live dissociation or splitting due to the effect of the event. So individuals should be directed away from the disaster area, physically injured survivors and ongoing dangers by giving thoughtful, calm and informative directives.

Communicating: After a disaster survivors may lose contact with their environment. At this stage, supporting, sympathetic and non-judgmental verbal or body language communication is very valuable. However, it is not always possible to provide this. In this case an individual should be directed to support centers where they can contact their close ones and other individuals and reach right and reliable information sources to meet their personal needs.

Ranking According to Urgency: Some disaster survivors may need a crisis intervention to overcome their first panic or mourning reactions right after a disaster. The symptoms of panic are tremor, overexcitement, inconsistency and irregular speech. The symptoms of mourning state are shouting loudly, excessive anger and

catatony (freezing). In these cases you should connect to the person in a way to show that you really understand them and have empathy for their pain.

Accompanying: In some cases, we can help disaster survivors to overcome psychological effects after the event by just being with them and making them feel that they are not alone.

The Things That Should Not Be Done During Psychological First Aid:

- Survivors should not be compelled to share their stories or special private details.
- Unrealistic consoling statements should not be made.
- Individuals should not be directed about what they should have felt in the past or now, about what they should think or do.
- Statements about the past actions, that can not be changed, "I wish you did not do this" should not be made.
- Trying to explain and comment about the problems of disaster survivors in terms of our own value system.
- Giving promises that cannot be kept.
- Criticizing help activities in front of the disaster survivors even if failures are noticed.

The Things That Should Be Done During Psychological First Aid:

- Establishing empathy and showing survivors that they are understood.
- Getting permission from the disaster survivors for psychological first aid applications and introducing oneself. Talking warmly and softly, making eye contact and addressing the survivor if possible by using his/her name First of all, meeting basic physical needs of survivors and paying attention to urgent medical conditions.
- Listening to the survivors who want to share their stories and feelings and not commenting whether it is a true or a false feeling. Being friendly ,compassionate and calm.

- Asking support for collaboration from survivors and giving simple but exact information about the event, losses, rescue and help works and needs and repeating this frequently.
- Ensuring that disaster survivors are together with their families and acquaintances. Family members need to be kept together.
- Giving practical advice to the survivors to ensure that they can themselves meet their own needs.
- Directing disaster survivors to resources from where they can get help and instilling hope by giving information to remove their fears and anxieties.

The Features that are needed in Individuals Helping Survivors of an Earthquake or such like Disasters

- Having taken psychological first aid training
- Being accessible in long working hours
- Being suitable to work in difficult circumstances, in temporary shelters and primitive circumstances
- Having the tolerance to work in ambiguous and changeable circumstances
- Being able to establish relationships with individuals coming from different age, ethnic origin, social, economic and educational levels
- Being sensitive about taking responsibilities and being able to work in an organizational structure
- Being able to make educational and instructional presentations to survivors and nonexpert volunteers,
- In contacting survivors being able to take all the details of what they went through and giving information to survivors about suitable resources and problem solving skills
- Being able to make eye contact with the survivors, displaying a self-assured attitude and making them feel that they are listened to in a friendly way,
- Having respect for survivors and not being judgmental,
- -Being able to use active listening principles during an interview with a survivor; allowing silences and communicating also with body language,
- Being able to reflect all the things told by a survivor and the emotions they have shown back to the survivor and to get feedback about whether the survivor was understood correctly
- Giving feedback to survivors about the feelings that they have displayed during the communication and making them aware of these feelings
- Letting the survivors express their feelings and give them adequate time Suggestions For Volunteers and Other Nonexpert Individuals Who Will Provide

Suggestions for volunteers and non-expert individuals:
The Things That Should Be Said

- Their reactions to the event are normal.
- Their feelings are very understandable.

- The severity of their reactions and emotions will decrease over time.
- They are doing the best they can.
- Nothing may be as before but the conditions will change and get better with time and they will feel better.
- Ask survivors what you can do for them.
- Tell them that you have got time and if he/she wants, you can listen to him/her.

The Things That Should Not Be Said

- Worse could have happened.
- Whenever you want, you can buy a house, car and animal again. You can start life again.
- I know how you feel now.
- You should go on with your life.
- You cannot die with the dead ones.
- Health is more important than loss of wealth.
- You should forget as soon as possible what has happened.
- They are in heaven now.
- Look at your state, you should think about your dearest ones, they need you.
- Think of the ones who are in a worse condition than you.
- You are young and you will get over it.
- This is fate and you should accept it.

In brief, individuals help providers should give an opportunity to survivors to express their experiences, emotions and perspectives and should respect and understand them. This is the right way to help.

Suggestions For Psychological First Aiders In Order to Prevent A Feeling of Burnout:

- Getting support and approval from colleagues and family members before going to the disaster area.
- Not to carry unnecessary belongings to the area and making preparations to have sufficient personal supplies.
- Taking along the necessary training materials and equipments.
- Sparing some time to himself/herself after returning home.
- Giving breaks for resting.
- Being careful about nutrition and sleep.
- If he/she smokes, trying not to increase cigarettes and avoiding using alcohol.
- Sparing some time for activities that will reduce his/her stress and make him/her relax.
- Keeping contact with family and friends.
- Making new friends.
- If the stay in the disaster area is for a long period of time , taking special care of the physical surrounding and trying to enrich it.

VII. ORGANIZATION OF LDV

A group of people who are organized according to specific principles and values and display common feelings and behaviours in practices for a purpose, is called “team”. Being a team enables to work harmonically. It prevents repetitions and increases performance. It gives self-confidence and pleasure while performing work and increases motivation. It strengthens friendships, develops knowledge and skills. It both enables obtaining early results and saving time and power. It stregthens the feeling of share and increases sources.

People with different knowledge, skills and performance unite their power so it would be easier to handle with demanding tasks. It enables us to have much power comparing to our power as an individual.Necessary Definitions For Group Work.

What is a Group?

Generally a group is defined as a community of people in which members share a common identity and certain characteristics, they interact with each other and meet its members necessities. According to this definition society could be considered as a big group. Small groups are formed by at least a couple of people coming together with different aims. Groups can be formed in accordance with predetermined aims or casually.

Muzaffer Şerif (1956), defines the group as a social unit which consists certain number of people who show respect under given circumstances below and interact with each other:

- Common objectives
- Accepted work sharing
- Group relations
- Adopted rules and values to be used about the subjects related to the group
- To show respect to the rules or to adopt sanctions (punishment and reward) in case of violation of rules

The characteristics of a "small group" which is formed in accordance with a predetermined aim and to perform a defined task:

- There might be different people with different status. Status gaps may depend on knowledge, skill, interest, experience, given or acquired administrative positions.
- There is/ are leading person/ people in groups whether they are determined or not.
- Even if there is a defined group leader, sometimes undefined person/people (implicit leader/leaders) may lead the group.
- Although there is a similarity in terms of status characteristics within the group, personal characteristics of each individual affect relations. Especially relation types of influential explicit (defined) or implicit (undefined) leaders may significantly determine the interactions.
- Besides, the meaning assigned by other individuals to their positions within the group and their expectations determine positive and negative participations to group interaction.

Communication Skills in Group

Group communication includes sharing of experiences and differences and acting in accordance with the same purpose. A successful group work is possible as long as the members respect the differences among them. When viewed from this aspect, group communication includes mutual respect. As long as the differences are handled in an unbiased way by different people, group work becomes an element that leads to success by increasing productivity. In other words group work necessitates acting together not competing. In order to form communication skills in a group, necessary processes can be listed as below:

Warm-up phase

It is the phase in which group norms and standards are determined. Establishing open communication and working place is founded in this process. All norms and standards accepted by all members are determined in a common decision process.

Starting to work together phase

After warm-up phase, it is the phase in which individuals express their ideas freely in accordance with the determined norms and standards. In this phase, individuals respect to other individuals' ideas, and if necessary, change their attitudes and behaviours to continue working together.

Application phase

It is the phase in which group members act. In this phase they make use of other's experiences and learn new social behaviour techniques.

Last phase

It is the phase in which group members make group discussions and role sharing in accordance with the first three phases. A common language is determined according to the purpose of group work. In this phase, a common language is formed with the same purpose related to the objective without competing.

Steps of Group Development

Configuration step includes "exploration" process in which team members become familiar with the leader and other team members, experience obscurity and fear related to acceptance and trust in general. Meeting, testing the borders, clarification of position within the team and establishing relations are seen in this step.

In "storm" step which is accepted as transitional period, disagreements and conflicts are seen among the team members. Expressing their ideas and attitudes clearly reveals polarization and differences. After perceiving personal and role differentiation, power and authority conflicts are seen.

In the third step called “norm formation”, it is seen that obscurity and ambiguity related to tasks disappears and everybody knows what to do. Norms and expectations within the team become clear with the development of attachment; an environment is formed in which trust increases, and there is an open and honest communiation and mutual feedback. At this step conflict leaves it space to cooperation and collaboration. Every member shares the idea that the first purpose is group success/performance. As a result, association increases within the team.

The last step called “action” is the step in which members enjoy the group and group life. Group becomes integrated. In this phase the group turns into a team. Exploration of the common points, attention and association to group dynamics are the most outstanding developments at this step. Each member understands his role and borders exactly, shares the troubles, is open to others, trusts them and association is seen the most frequently at this step. To what extent the group reaches its objectives and purposes defined at the first step and investigations about the group development are shared.

Table 7.1: Steps of Group Development.

	Configuration	Storm	Norm formation	Performance
Personal	Would I be accepted?	Would I feel respect?	How can I help the group?	How can I do better?
	How can I make a contribution? (Feeling of ambiguity and doubt is dominant)	Which of my ideas, experiences and proficiencies can I offer? What can I take from this group? Will I be agree or disagree?	How do I work? Even he wants to help, he has anxiety about his role in the group.	He expresses his feelings and ideas freely.
Inter personal	Kindness	Power	Cooperation	Enthusiasm
	Brief conversations. Generalizations. Limited sharing. The phase in which communication is shaped..	Who will manage? Who will be my partner? Arguing or escaping	Realizing the other opinions. Efficient listening. Being a part of communication	A phase in which praise and criticism exist together. Direct communication is established. People think more on the subject.
Group	Understanding Group	Organized	Flow of Information	Creative Solutions
	Why are we here? What's our mission? Determining the strong parts of the group.	What's the real problem? Being unbiased to different opinions.	A phase in which people are open to exchange of ideas and experiences. Determining the problems and solutions.	Decision making step. Intense desire to complete the mission. Gives importance to communication.

Necessary Features to Form an Efficient Team Work:

- A comfortable, constructive, positive place
- To ensure the participation of each team member
- To make each team member feel that they are useful
- To make each team member understand that they are listened and approved
- To make all thoughts open to evaluation
- To argue clash of ideas with a clear communication
- To include each team member to the subject
- To ensure regular and continuous participation
- To make sure that objectives and purposes of the group are understood by each member
- To do task sharing equally
- To respect team member's different point of views, life styles and abilities
- To make differences serve the team work and purposes

Learning or working within a team are activities in which values, knowledge and producing common things are shared. In order to do this sharing efficiently and be successful, each group and each member should accept and respect differences in the group.

What is Leadership?

Leadership consists of multiple skills. In order to be a leader, features like efficient interacting, listening, cooperation with people and taking responsibility are necessary.

In order to be a good group leader, the group should be closely observed and evaluated. At the same time, features like deploying people by supporting, cooperating, encouraging, leading by providing convenient examples and success, differentiating personal contributions and rewarding success thus ensuring emotional participation as well, are among the necessary features.

Generally a leader is the person who motivates, impresses, and leads. In order to be a leader, having an objective and communication skill is necessary.

How can be a good leader?

- By trusting team members
- By developing a point of view related to the objective
- By being calm
- By encouraging the team members about taking risks when it is necessary
- By being an expert on the subject
- By encouraging people to oppose and express their different opinions
- By making simple not complex

How can be a bad leader?

- By creating trouble interpersonal relations
- By misleading people who trust himself
- By not doing task sharing
- By constantly reminding other people's successes
- By avoiding to act
- By keeping relations at the minimal degree with team members

Necessary Fundemental Characteristics of Leadership

Communication: There should be a highly efficient communication for a strong leadership. Communication is important for leadership as well. Communication is a versatile activity which consists different acts such as writing, reading, listening and speaking.

Listening: It is the type of communication which should be applied mostly by people but which is given least importance on the contrary. One of the most important requirements of leadership and management is to know how to listen. A leader/manager, who knows how to listen, knows his team better, and easily finds solutions for problems. There are different types of listening:

Listening to Content: Listener tries to understand what speaker says.

Critic Listening: Tries to understand what speaker tries to mean.

Empathy: The type of listening which aims to understand speaker's mood and feelings. Listener puts himself into speaker's shoes and listens most of the time.

Active Listening: The type of listening which aims to settle controverseries and remove differences. Listener listens by using his body language and questioning whether he correctly understands speaker.

Nonverbal Speaking: Communication is accepted as the words getting out of the mouth whereas communication would be established with body language without speaking between people.

INCIDENT COMMAND SYSTEM (ICS)

Because there are similar characteristics and necessities of emergencies all around the world, with the cooperation of disaster responders, a standard disaster management system is developed that enables different teams and individuals to work together easily. Now, "key assignments" for the first response are understood better. Incident command system has the essential structure to solve organization and communication problems all around the world. ICS is firstly developed after the chaos experienced during a big fire in North California. ICS is an international system now. In this respect, fundemental functions, principles and task sharing of ICS are given below in detail to enable local volunteers to be organized immediately without waiting for the professional teams and when professional teams arrive, to support them.

Fundamental Elements of ICS

Fundamental elements of ICS are like these:

Combined Command Structure: Combined command structure is appropriate for every kind of disaster management whether it's at small, big or mass scale. Owing to this system, first responders from different organizations and local volunteers may respond to the incident together. At the same time this system enables continuos management for the most convenient people.

Manageable Control Range: A single leader may lead tens, hundreds even thousands of people directly. But manageable control range for an incident commander or team leader is between 3 and 5. Number of ideal person is 5. Organization can grow if manageability of control range is ensured. Proper number of people should be assigned as responsible team leader to give reports to incident commander for a specific location when more people are needed. Responsibility should be distributed and work sharing should be made.

Flexible Organization: A flexible and modular organizational structure is highly important because each disaster is different from the other and has different necessities. The dimension of response may be enlarged or limited according to situation and emergent needs. In case of a disaster, aid of 10 or 10.000 people can be required. Response can be carried out by a single team or several teams as well. Information flow occurs as bottom-up or top-down. Same principles are carried out no matter what the response dimensions are. System requires immediate response without waiting any directions from the top management. The team can be fitted into its place like a missing part of a puzzle when local authorities arrive.

Flexibility means activating only necessary functions and departments, at the same time a person can perform multiple functions until adequate aid arrives. When needs change, missions of the people may change to meet these needs.

Standard Language Association (common language): A common terminology is neccesary when different responders with different skill and experience levels participate. At disaster planning phase, common terminology enables responders from different organizations to use common concepts and understand each other by using the same language.

Using similar structure and common language enables team work everywhere even among the strangers. When considered at local level, with the help of sharing information and maps related to possible sources and hazards even at the planning step, first responders coming from disaster neighbourhood or out of it, come to disaster scene as having an idea about the general environment beforehand. It doesn't mean that labours of LDVs during mutual cooperation come to nothing after they transfer their works to professional responders.

Central Communication: In central communication a person is only answerable to one person. Communication at the command center occurs as bottom-up or top-down. Commanders at all levels within their control ranges, receive information efficiently and disseminate. It is important to note that dissemination is limited to control range. Information is gathered into a single center to make a fertile and efficient decision.

Detailed Resource Management: All demands go to command center in order to send aids to the right places efficiently in which these aids are needed mostly. How to use the sources is determined by taking the whole incident into account. Sources are coordinated and sent from center to field efficiently.

Structure of ICS

There are basic management activity or processes to conduct necessarily in every incident or emergency. Even if the incident is a small activity in which 1-2 people take place, organizational structure should be established. Incident Command System is structured with expandable five functional units in terms of organization as it is shown at Figure 7.1.

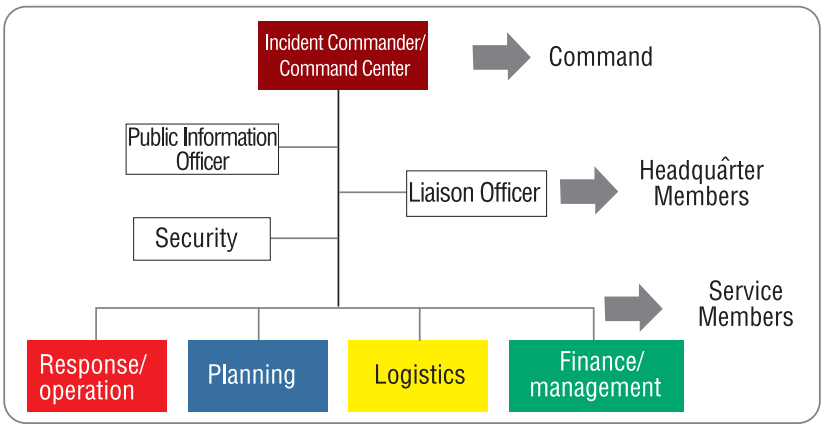
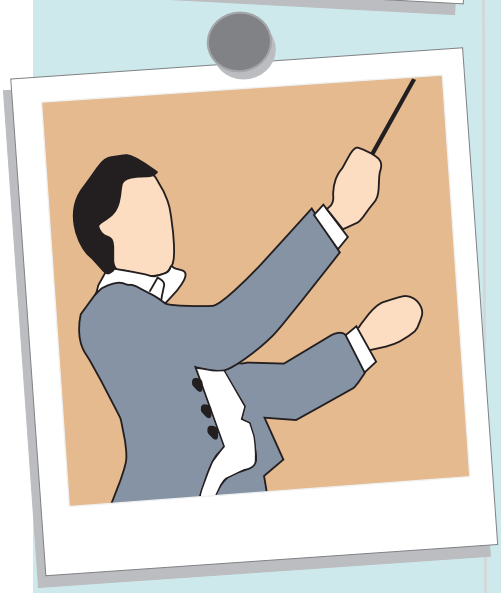


Figure 7.1: Organizational Structure of Incident Command Center.

- Incident Commander
- Response / operations
- Information and planning
- Logistics
- Finance and Management

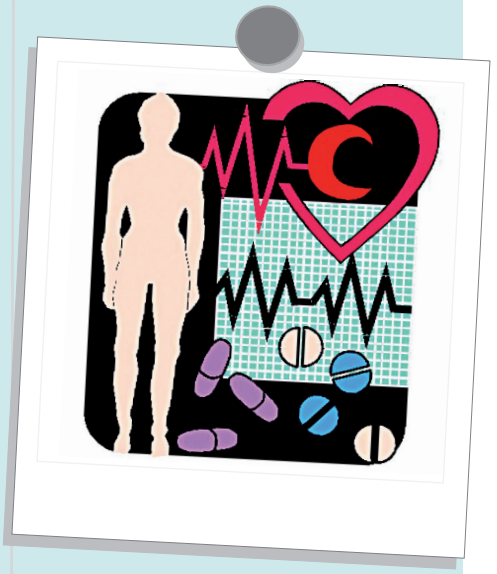
These five fundemental functions become meaningful during the development studies of ICS. These functions, no matter how big or small they are, form the basis of search and rescue organizations. In small incidents, all of these functions may be the responsibility of a single person called operation leader.

The number of people having fundemental functions would increase and personnel at sub-units need to be a part of the operation as the dimensions of operation expands. As a natural result of ICS, each fundemental function can be divided into subgroups according to the feature of operation when it's necessary.



Incident Commander-Incident Command

In every response activity a person should be in charge of the operation. This person is responsible of process and continuity of all system; the security guard, who will be explained in further chapters, evaluates and manages the situation by taking the reports from press agent, contact person, response/operation unit, information and planning unit, logistics unit, finance and management unit.



The people who do not work in four fundamental teams, which work under the command of incident commander, have some duties as well. These people should be charged with other fundamental activities important for incident response. These activities can be conducted according to the given missions below:

Security Guard: Provides the security of incident command center to ensure continuity of operations.

Press Agent: Be in contact with media; delivers necessary information to press and public.

Contact Person: Is responsible of relations with other agencies and institutions.

Primary Responsibilities of Incident Commander:

- Incident commander is the only person in charge in disaster operations until authorities arrive.
- He stays at Incident Command Center, watches and manages all operation.
- He ensures the security of neighborhood residents and himself.

Duties of Incident Commander:

- Defines type and scope of the incident.
- Evaluates damage conditions of structures and all kinds of hazards that threaten human life.
- Establishes ICS organization.
- Determines contact person, logistics leader, operational leader, planning leader, management and communication leader.
- Organizes task sharing according to sources for other tasks.
  - Operational teams
  - Logistics
  - Fire and hazardous substance
  - Light search and rescue
  - Triage, first aid and medical aid

- Defines dimensions of the incident.
  - Incidents to be responded immediately (high priority).
  - Incidents that can be responded after a while (low priority).
- Lists incidents according to priority.
- Makes source sharing for incident response.

Response/operation

Team carries out all operations and response exercises. Within this scope, search-rescue, fire extinction, immediate medical response, first aid and similar activities may become a part of the incident. Thus, search-rescue, fire extinction, immediate medical response and first aid teams work in this group.

Primary Response/ Operation Responsibilities:

- Damage and hazard assessment
- Volunteer safety
- Ligh search and rescue
- First aid
- Defining hazardous substances
- Extinguishing small fires
- Defining sources and needs

Duties of Response/ Operation

- Arranges the places and possible routes of medical response area and transfer vehicles.
- Informs operation and logistics units when additional sources or personal are needed.
- Coodinates response teams.
- Conveys information to incident commander as information comes from response teams.
- Informs incident commander about duties and priorities.
- Ensures that response teams follow working standards, provide security and conduct activity reports.
- Determines resting time periods and makes differences about employment of team members according to needs.

Duties of First Aid Triage Team:

- To ensure that volunteers work properly and to control.
- To form immediate medical material support.
- To call life support (medical) team at first initial contact with the victim.

- To be entegrated with search and rescue members and make decision on the rescue strategy together (especially conditions like crash syndrome).
- To apply first aid to light casualties.
- To arrange triage area near incident scene with the support of logistics members.
- To prepare casualty reports.
- To ensure casualty transfer with medical vehicles (ambulance).

Light Search and Rescue Team

They are the first members to enter the collapsed-demolished buildings so they can work in confined and narrow places and have knowledge and experience. The first damage assessment is made. Search and rescue activity is made only for lightly and moderately damaged structures. They work collaboratively with the team leader in every step of the operation.

Duties of Light Search and Rescue Team:

- To determine places with gaps.
- To determine hazards and take precautions.
- To determine the places of victims.
- To isolate victim and apply first aid.
- To call medical personnel when it is necessary.
- To get victim out of the dangerous area.
- To ensure that each activity is safe and efficient during rescue operation.

Duties of Fire and Hazardous Substance Team

- Extinquish small fires.
- Defines hazardous substances and separates them (get out of the area if possible).
- Closes water, electrical, natural gas and all other installations.
- Works collaboratively with operation leader in every step of operation.

Information and Planning

During response activities while search and rescue and similar activities continue, information related to all activities should be collected and planned as well. Otherwise a great chaos may occur. In order to prevent that, the person who will work under the command of incident commander and people under his command manages information related to incident.

Duties of Information and Planning:

- Follows the momentary and current situation of present units and teams to work in an operation.
- Determines at which step the incident is.
- Prepares operation plan.
- Does documentation activities.
- Makes demobilization planning about post-event.
- Especially determines the regions of rescue teams to work initially.

Logistics

While team works intented to response/operations continue, logistics needs of both these teams and other personnel and teams occur. To provide continuity of operations, these needs should be supplied. For example, equipment used by search and rescue teams, food-drink supply, transportation are conducted by the person/people under the command of incident commander.

Primary Responsibilities of Logistics

- To determine needs beforehand.
- To establish response areas.
- To establish service units.
- To supply personnel, equipment and material need according to incident.

Duties of Logistics

- Chooses a service area with the approval of incident commander.
- Establishes a communication center.
- Determines messenger/messengers to convey messages to Incident Command Center. (All messages should be written).
- Prepares a communication schedule.
- Separates locations and establishes service units for support units like cleaning, nutrition, shelter and psychology.
- Prepares a list which shows present sources.
- Opens stores to service.
- Distributes sources and equipments according to need.
- Conducts equipments and team.
- By ensuring the inspection of equipments, makes maintenance and repair.
- Establishes emergency coordination center.
- Supplies shelter, clothing and food needs of team members.
- Helps team members to locate equipments and materials in proper places.
- Ensures the existence of critical equipments' spares.

Finance and Management

All activities conducted during response have a financial and administrative dimension as well. While activities continue, it would be proper to assign the person/people under the command of incident commander to financial and administrative activities. Creating all kinds of financial sources that are neccessary during response activity, making payments and similar activities can be considered within this scope.

Organization of LDVs

Although professional search and rescue teams are united, they give service seperately so their responsibilities are different. But it would be different for volunteers. If the conditions are suitable separate teams can be organized. It is expected that certain number of volunteers would respond during the first hours of a disaster so both search and rescue operations may be conducted with the same people. Thus, volunteers who are limited in number in any case, should learn both search and rescue procedures. They can give assignments among themselves later on. Their activities are limited because of their limited responsibilities.

A search team should be considered asconsisting of 5 people with at least 1 team leader, a rescue team consisting of 5 people with at least 1 team leader but this number can increase. But each volunteer team should not exceed 7 people in terms of administrative dimension. Even assignments get united, a team should consist of 7 people together with 1 leader and 1 asisstant. This team is the team who would conduct search and rescue during the first hours.

Search Team
- 1 team leader and 1 assistant if necessary
- 5 personnel
- Equipment

Rescue Team
- 1 team leader and 1 assistant if necessary
- 5 personnel (logistics-first aid applier-rescuer)
- Equipment (transportation-communication-rescue)

VIII. COMMUNICATION OF LDVs IN DISASTERS AND EMERGENCIES

Communication in Disasters and Emergencies

Communication is a kind of interaction which enables people to make daily contacts with other people, using audio, visual, written materials and symbols to ensure information, data, message and news tranmission between two points or different groups.

Communication channels should be safe. A list should be prepared including name, address and telephone numbers of all LDVs.

Current Communication Tools

- Telephone network
- Fax
- Satellite telephone
- VHF/UHF/HF radio
- Internet Access
- Universally accepted markings

Telephone net

It is one of the most commonly used communication vehicle to contact. It is easy to use and widespread. Its possibility to get harm in extraordinary conditions and disasters is relatively high; it can be out of order as a result of overuse; it is fixed.

Mobile phones (GSM)

It is the most commonly used communication vehicle in daily life. It has a broad communication network. Written messages can be sent by mobile phones; it is easy to carry; enables mobility. It can be out of order because of overuse in disasters and emergencies; lack of communication can be seen in remote places far from base stations. Sending messages is a good solution in this kind of situation.

Fax

It enables transfering drawings and graphics easily when sending printed papers and long contexts. It is easily used in transmission of signed documents. It is not efficent as a result of possible damages caused by disasters and extraordinary conditions. It is fixed.

Satellite telephone

It enables communicating in all kinds of environments. It is more expensive comparing to other communication vehicles. But even in open areas and conditions in which other systems do not work, it can be an exact solution. It can be used both as a mobile and fixed vehicle. It works as establishing communication with the satellite so is not affected by GSM networks. Simplicity of establishing a communication network with satellite telephones should be existent in all kinds of immediate response organizations.

VHF/UHF/HF Radio

It is the most useful communication method to ensure information transmission between two people or groups, especially movements of mobile units, conducting coordination in a certain order at command center. It is easy to use and mobile. It has a high sound quality. Besides, its possibility to get harm in extraordinary conditions and disasters is low.

A relay system is necessary for a widespread and broad network. In case of buildings, mountains and hills existence, low sound quality and lack of communication can occur while using hand vehicles. Parts of radio : radio, antenna, microphone and power supply.

Parts of radio: radio, antenna, microphone and power supply.

Radio Communication Rules

- Choose the channel correctly to speak.
- Decide the subject of speech and to whom you will make a call beforehand.
- Follow the communications closely on the channel you choose, start communicating after you are sure that other communication has ended.
- Start speaking after a few seconds pressing the latch.
- At first introduce yourself and what you represent (crisis center) clearly while speaking.
- Be careful that your speech is short and clear.
- Finish by saying “OKEY”.
- Indicate whether the message is understood or not by saying “CLEAR” or “NOT CLEAR”.
- Do not change the channel without taking any direction as much as possible.

- Call signs of services in immediate response are numeral and communication is enabled by coded speeches. If you do not know the code, do not respond unnecesarily.

Warning!

Speaking distance for hand radios is between 3-5 kms. This distance may decrease because of buildings and similar structures in city.

In order to establish a healthy contact:

- The antenna of hand radio should be at upward direction; speaking microphone is on the mouth level and away 10-15 cms from the mouth. The latch should be released after 1-2 seconds when speaking completely ends.

- To stay at a high place makes your communication distance more efficient. If you are at a closed place or have weak cell signals be careful about not finish battery of the vehicle by making unnecessary latching.

Internet access

Information, graphic/picture and video can be sent via electronic mail through internet. Today internet based information sites are used widely. It is used by group members or groups to communicate with a center; UN-INSARAG has conveyed information to international teams efficiently through internet in Pakistan eartquake.

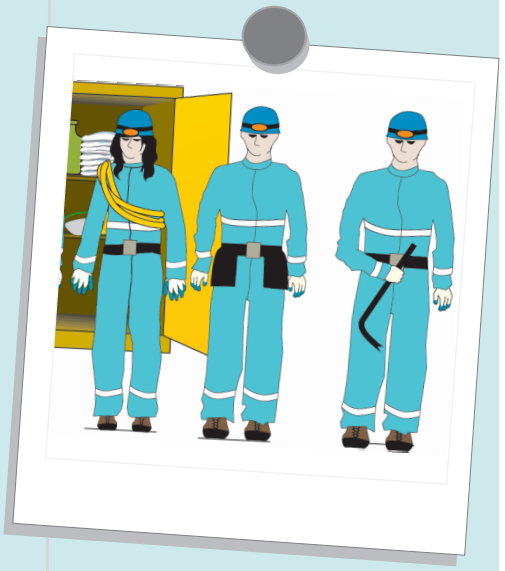
- It is easy to use, cheap and widespread, can convey different kinds of information.
- May get damage because of disasters.
- Usage level is low except urban areas.
- There is the problem of database security.

Universally accepted markings

They are the communication types which are used by humans since the early ages and accepted by groups and societies in time. Generally changes according to service area but it is a kind of symbolic comunication type that helps to form a common language. Especially gathering, emergency, NBC or international building marking systems, which are necessary for responders, are accepted as a common language.

It is efficient when other communication types do not exist. According to service type, knowledge is required.It not convenient for long term usage.

IX. SUPPLIES AND TECHNICAL EQUIPMENTS



These are the equipments developed to respond efficiently in disasters and accidents, produced for high strength and performance in terms of characteristics.

Personal Protective Equipments

There are some risks related to working environment while conducting search and rescue activities. In order to make responses more efficient, conduct in a safe environment and provide continuity, our personal protective equipments should be convenient for this job. These protective equipments should be provided before operation and put in response bag or container. Personal protective equipments consist of these:

Helmet

It should has the quality to protect responders from risks in working environment (falling objects, sharp and spiky concrete pieces). It protects the head and partly neck region. Head is the most risky part so areas, in which debris and damaged structures exist, are the most risky places for head.

Work Uniform

These are the uniforms intended to protect responders from risks in working environment as much as possible (dust, sharp objects and pieces of debris). Elbow and knee parts should be produced as much supported because these parts mostly touch the surface while working. These are used to protect the body from dust, debris, pieces of concrete, bricks and similar abrasive effects and to prevent bare skin touch.

Safety Goggles

Safety goggles protect eyes from dusts, stones threw by hammer drills and similar debris hazards. Responders should use safety googles which have antifog quality and enable wide field of view.

Work boot/shoes

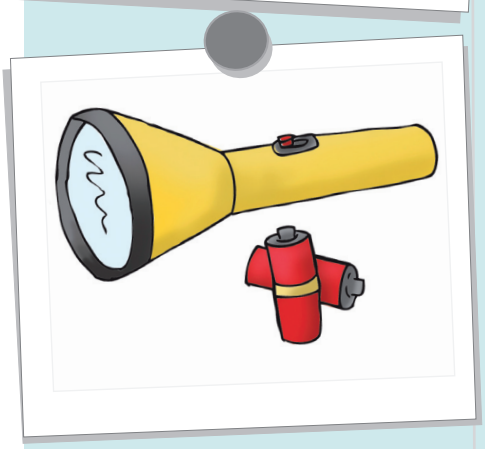
These are used to protect responders from risks in working environment as much as possible (dust, sharp objects, pieces of debris ad unstable objects). There are steel toe and steel sole models. The models which are antistatic and resistant to abrasives should be chosen. S2 and S3 class boots can be preferred for debris.

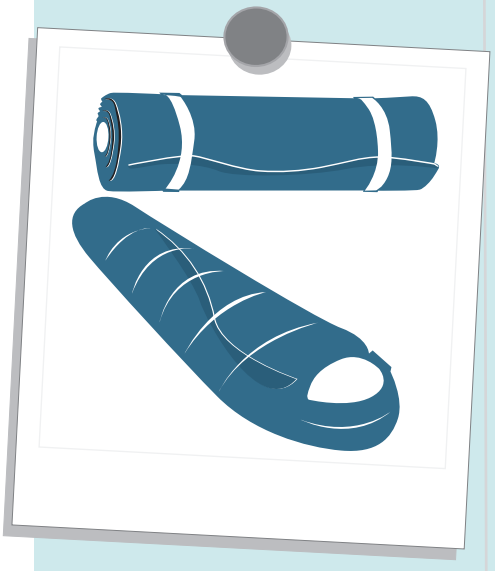
Protective gloves

There are a lot of sharp and sticky pieces in debris so protective gloves should be worn while using tools and doing other works. Gloves prevent the possible injuries caused by these tools.

Other Personal Equipments:

- Latex gloves
- Dust mask
- A pair of knee guard
- Hand light and spare batteries
- First aid kit (personal)
- Spare underwear and socks
- Sleeping bag and mat





Technical Elements

Tehnical equipments have a wide usage area from light search and rescue to heavy search and rescue. But teams that are on the level of LDVs and would only conduct light search and rescue operations should be careful about the equipments. They should have special training for these equipments and do practises. It is obvious that these equipments are mostly used by professional teams but as LDVs has an important mission like to help search and rescue teams, they should have basic information about these technical equipments.

Other technical equipments used in search and rescue operations are classified according to their technical features as below:

- Electrical equipments
- Hydraulic equipments
- Mechanical equipments
- Other equipments

Figure 9.1: Generator.

Electrical Equipments

Generator: It is used to activate technical equipments, radio and telephones in disasters and extraordinary conditions and also illuminating the environment and temporary shelters (Figure 9.1). Generators used in search and rescue operations have a 4 cycle engine between2 kw and 8 kw in general. Fuel and oil should be controlled before activating, choke device should be turned on when starting-up and the weather is cold. Generator must be activated on flat ground. While engine is working, extra fuel should not be added, should prevent smoke caused by the generator to affect responders and victims in working environment and it should not be in the direction of downwind. If it is not used for long time petrol tap should be turned off. After the engine is turned on, should be waited for to start-up and used after 3-5 minutes.

It is not possible to know when will extraordinary conditions and disasters happen. In order to use the engine efficiently in a possible response, its maintenance should be made periodically. If the engine is arm propelled, drag rope is controlled by hand and eye. Fuel and oil filters should be changed when it is high time considering written hours in maintenance guide. Air fitler of the engine should be cleaned with compressed air and old filters should be changed when it is necessary.

Lighting equipments: Lighting equipments are water resistant and used in disasters and accidents, they have a system which enables them to stay on inclined surfaces or at upward and downward direction.

It transmits the energy taken from power unit to lighting bulbs through wires. Wires of lighting projector should be laid completely while working. They should be on a flat ground. They should be fastened to the ground or a fixed point with ropes when the weather is windy. Due to the emerging heat during lighting, necessary precautions should be taken about not to shake or fall while using or moving. Moving, compression and set points of lighting system should be oiled with suitable oil. Halogen lamps should be controlled at maintenance periods.

Warning!
Because these halogen lamps are consumable materials, it is important to have plenty of spares.

Rotary hammer drill: It is used especially at debris to open passages by breaking concrete parts and reach the victim. It has electrical motor working principle and works by pushing handle and start buton (Figure 9.2).

When the team uses this equipment, they should be careful about its wire not to get any damage from caustic and sharp materials. While opening passages, if under the concrete wall to be broken or dirilled is not seen, breaking activity should be done carefully. Do not forget that the victim under the concrete wall may get harm or hazardous substances may react. Wire of the equipment should be controlled with hand and eye. Balls and their beds holding drill bit should be controlled. Necessary changes should be made in time considering coals of the equipment.

Figure 9.2: Rotary hammer drill.

Hydraulic Equipments

Jack: It is used to lift or seperate heavy materials (Figure 9.3). It is closed by turning oil control valve on device. Then, jack's lifting arm is inserted so piston would ascend. When intended height is achieved, working ends.

Figure 9.3: Hydraulic jack.

Lifting equipments should never be used as support material. If surface to be lifted is risky, both ceiling and ground should be supported with chocks. If there is a collapse or crash risk for the section to be lifted or seperated, it should be got out as pulling with a rope. They should work according to the lifting capacity of the jack.

Control screw of the equipment should be cleaned regularly. Lifting pistons should be completely opened and cleaned at the time of maintenance. Hydraulic oil change,which enables lifting, should be made according to usage and considering environmental factors.

Mechanical Equipments

Hand cutter: It is seen at working places and used especially to cut construction irons.

Risks should absolutely be evaluated while cutting other parts. The pipes, in which electiric wires and hazardous substances pass, should not be cut. While cutting, should be worked as pairs.

After the task, its external cleaning must be done and moving pins should be oiled, damaged parts should be changed.

Other Equipments

Ladder: Ladders are one of the basic necessary equipments used in search and rescue operations. There are a lot of fabrication ladder types. Besides, ladders can be produced as improvized.

Ladder types:
- Straight ladder (wall ladder)
- Trestle ladder (two piece-three piece- retainer and extension)
- Step ladder

The place of use:
- Passing and entering upstairs
- Evacuating wounded person from upstairs and windows
- As improvized stretcher
- As improvized bridge
- As sledge
- To work at a high place without holding anywhere (with step ladder)

Necessary features of ladders:
- They have to be compliant with standards
- Have to be light as much as possible
- There must be locking system in trestle and step ladders
- Their stairs should not be made of slippery material.

Things to be careful about while using:
- Ladder must be chosen according to purpose.
- There mustn't be any lifting materials.
- Do not climb the ladder with oily, sticky shoes.
- Ladders stairs must not be put on wet, slippery, oily floors.

- The last step to be climbed must be at least 1 meter under the point where the ladder leans.
- The heel of the ladder must be as distant as its height or 1/4 of its height from down to lean point to the wall.
- If it is necessary, the head of the ladder must be out maximum 1/4 of its height from the point it leans.

Material List

Necessary Equipments/Materials for Logistics

Duty vest or identity card for duty place
Radiotelephone
Table, chair
AM/FM radio
Pen, paper
Terms of reference
File boxes
Sent message box
Immediate response materials inventory

Store

Roof-chest and hanging elements
Repair and maintenance set
First aid set
Cleaning set
Lighting generator
Wash basin
Packing materials
Fire extinguisher
List
Control list
Head information
Warning posters

Eartquake Rescue Equipment List

- Generator
- Lighting table and equipments
- Electric breaker
- Electrical hammer drill

- Spiral grinder with gasoline motor
- Electric spiral grinder
- Battery powered foxtail saw
- Battery powered screwdriver-drill
- Gasoline chain saw
- Repair-maintenance saw
- Extension wire
- Safety tape
- Sledge hammer
- Hammer (1 kg)
- Bush hammer
- Chisel
- Cold chisel
- Lever arm
- Big-small iron cutter
- First aid set (big for the team)
- Body bag (according to need)
- Tent (to protect the materials and shelter for the team to rest at night)
- Water barrels
- Radios
- Stretch
- Ladder
- Megaphone

Hydraulic Cutter-Separator-Stretcher Set

Heavy Separator
Heavy Cutter
Cutter-separator (light-combined)
Hydraulic generator
Manual hydraulc generator
Chain-hook set (for pulling)
Meter hydraulic hose (with different colors)

Sensitive Sound and Locator Equipments

Sound locator
Search camera

X. INTRODUCTION TO SEARCH AND RESCUE

In the aftermath disasters like an earthquake, several buildings may get damage, people and other livng beings may be trapped under the debris or get affected in different ways. Aid may not reach immediately to disaster victims. For this reason, everybody on incident scene must help each other until professional teams arrive. At first hours, there is the obligation of responding to several incidents with limited sources. If response is conducted in a shorter time, livingbeings' possibility to survive and rescue increases. A carefully and consciously conducted first response would be a great advantage for the next rescue teams. Later on, continuity of aids should be provided in managing teams.

In order to make the response successful and help other teams, there are several necessary points to know. The most important ones among them can be listed as below:

- To learn what can be done after the first hours of a disaster and professional responders come
- To have information about early response planning
- To have information about light search and rescue
- To have information about search and rescue team awareness and working principles
- To learn building damage classification for a safe response in light search and rescue

So the objective of volunteers:
- To help many victims with limited time and sources
- To support aid teams and make their response process easier

In statistical studies made in our country and many countries which have experienced earthquake, data about who conducts search and rescue operations at debris during the golden hours (first 72 hours), are approximately as given below. According to this:

- 32% with their own efforts
- 30% of survivors rescued by their family members
- 28% of survivors rescued by their neighbours and friends
- 3% of survivors rescued by tresspassers
- 7% of survivors rescued by professional teams.

If trapped victims are rescued within the first 24 hours, have 80% chance to live. This first 24 hours are named as "golden day".

Urban Search and Rescue Teams (USAR): UN usar team classification system has identified three levels of classification. These are Light, Medium and Heavy USAR teams.

1-Light USAR Teams have the operational capability to assist with surface search and rescue in the immediate aftermath of the disaster. Light USAR teams usually come from

the affected country and neighbouring countries. It is not recommended that Light USAR teams deploy internationally to emergencies.

2-Medium USAR Teams have the operational capability for technical search and rescue operations in structure collapse incidents. Medium USAR teams are capable of breaking, breaching and cutting concrete. Medium USAR Teams are not expected to have an ability to cut, break and breach concrete reinforced with structural steel.

3-Heavy USAR Teams have the operational capability for difficult technical search and rescue operations in structure collapse incidents, particularly those involving structures reinforced with structural steel. Heavy teams are envisaged for international assistance in sudden onset disasters resulting in collapses of multiple reinforced concrete structures, typically found in urban settings, when national response capacity has either been overwhelmed or does not possess the required capability.

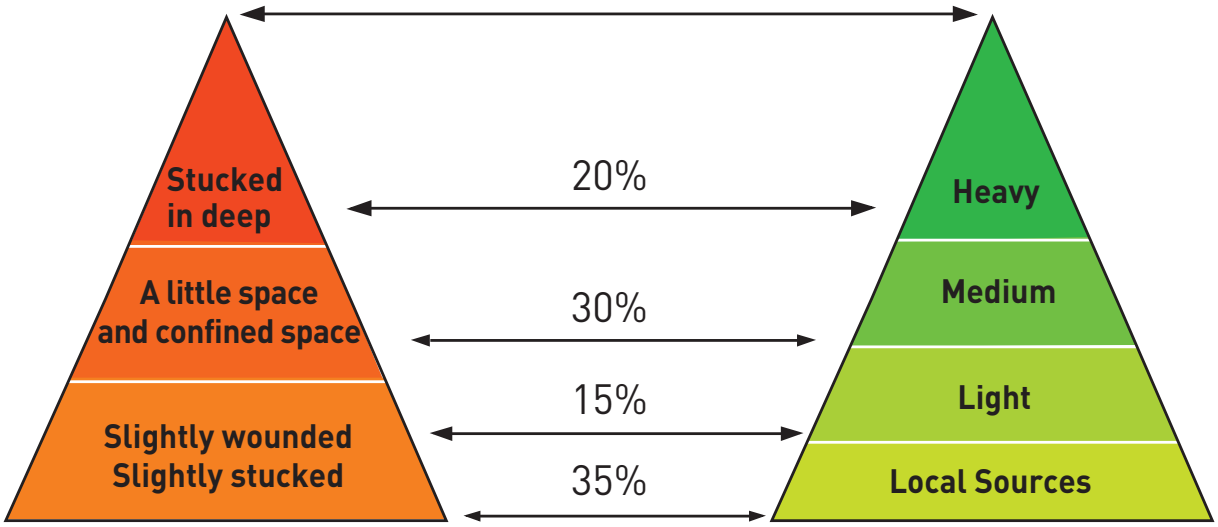


Figure 10.1: Rescue-time-team pyramid.

At Figure 10.1 it is seen that lightly impacted people from a disaster, which causes structure collapse, will be rescued by people around. This is done immediate after the disaster and requires very little equipments. But if the victim is trapped especially in concrete structures, professional skills and equipments are necessary to find his location, reach and rescue.

Before Search and Rescue

Search and Rescue Elements

Each individual assigned in search and rescue operations has to know organization and basic elements of search and rescue. These knowledge form the base of search and rescue and have to be known by all LDVs from manager to his personnel and inspectors to form a suitable working system at the moment of a real crisis. These search and rescue elements always exist and formation order is nearly the same every time.

But the operation leader should analyze each step to the slightest detail and solve the detail characteristic so he can be aware of at which step he is and solve all detailed complex elements of the whole. When the operation leader becomes aware all of these, he will ensure that search and rescue operation will continue successfully with operation center and structure; at the same time he can solve economical development and necessary thing to do. As a result of this, search and rescue operation would reach its purpose in a safer and quicker way.

Basic elements are composed in a chronological order and happen in a certain sequence; but search and rescue elements may intermingled each other during development. Planning and strategy stage may really happen only after the first operation team starts working together with the tactical stage. Naturally, planning continues as new information comes or a method is developed. In accordance with the negative weather conditions or newly found clues, activities like returning back in the programme or searching of unplanned places may happen. Therefore, it can be said that the system has a flexible structure but works in a certain order as well.

Detailed information about the subjects mentioned as basic elements; "preplanning", "receiving first information", "planning and strategy", "tactics", "operations", "stopping activity" and "evaluation" is given below.

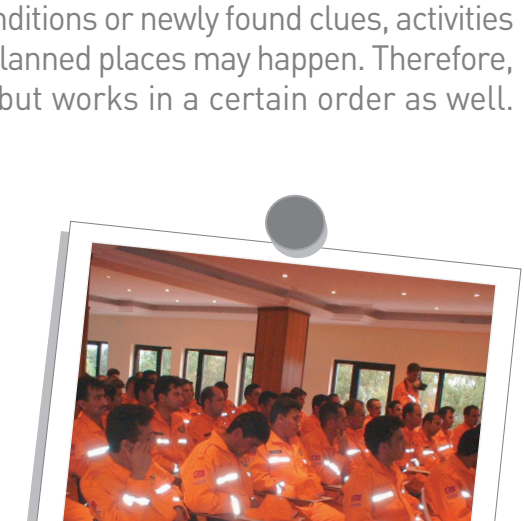


Figure 10.2: Preplanning.

Preplanning

According to experiences gained from disasters, people who apply first aid to trapped or wounded victims are usually volunteer, give certain importance to personal safety or do not give any importance at all but well-intentioned. Although these instant rescue efforts prevent life losses in some cases, they generally cause serious injuries and increase problems. In order to prevent the problems caused

by instant activities, to plan rescue operations beforehand and to practise has significant importance.

Preplanning is the stage in which all kinds of equipments and personnel to be used during operation are planned beforehand (Figure 10.2). Besides having necessary equipments and make them ready, it is important to organize a LDV organization specially and being administratively charted (hierarchical).

Receiving first information

It is the first stage when information about whether a person is lost, late or has accident is taken. In this stage, one or more people should evaluate the received information, whether it is really a problem or an incident that may cause a problem. This may sound unreasonable but this stage has to be applied in order not to be a mistake. Receiving first information has two dimensions for search and rescue teams. These can be listed as those:

Denouncement: Search and rescue request
Call: Operation call for search and rescue personnel

Denouncement: It is the phase in which help request comes to search and rescue association/s when person/persons need or may need search and rescue operation. This call may directly come from the person who needs search and rescue, his relatives or an institution. When the call is received, the first thing to do is, starting the process of getting information about the dimension of the incident and lost person/s. In this process there are basic questions to ask to the person who denounces. These are;

- Identity information of the lost person/s (name, etc.) and physical characteristics (height, weight, hair color, eye color, glass, an pyhsical disability, etc.)
- Where the lost person/s is gone, what for and when he is gone.
- The last place he has seen, whether this information is confirmed or not.
- Materials that the lost person/s have, whether he knows to use or not.
- If he is in nature, whether he has training about survival or similar topics and has self-help ability.
- Contact information of people to contact for getting more information of person/s.
- To have the photograph of lost person/s if there is.
- To get information about the clothes of lost persons.

After getting necessary information and need for search and rescue operation arises, suitable sources (search and rescue personnel, equipment, vehicles, etc.) should be deployed to start searching. Each institution should establish a communication chain to do that. It is important to determine personnel beforehand and make them ready to deploy sources immediately in search and rescue operations.

Call: It is the phase in which search and rescue personnel is called and operation starts. In this phase, call can be made with the communication sources of the institution itself. Search and rescue personnel can be called by telephone, radio, pager or even via electronic mail. Search and rescue personnel would need some basic information to make necessary preparations correctly. These can be listed as those:

- Basic information of lost person/s
- Type of search and rescue operation (earthquake, flood, mountain-nature, avalanche, etc.)
- Type of the land
- Weather condition of present and near future
- Suitable cloth, supply and equipments; condition of necessary clothes and equipments for special circumstances
- Meeting time and point
- Communication directions for operation (radio frequencies/channel information)
- How to communicate with personnel in case operation is cancelled
- Where and how to register for operation

All these subjects should be determined before search and rescue personnel starts operation.

Exploration should be the first step of search and rescue operations and emergencies. In accordance with detections after exploration, security precautions of incident scene are determined and taken. About debris,information related to for what purpose the building is used, how many people live in it, features of structure and plan, what kind of operations are conducted until then, how many people are rescued at the moment, are obtained. Time of collapse (if it happens at the moment of the incident like earthquake/explosion, etc. or at the moment of aftershock) is important.

All reponses from the beginning to the end of incident, detections, information and all kind of data transmission related to its consequences should be given as verbal and written for formal institutions (to the team leader of formal search and rescue personnel on secene or crisis center).

Figure 10.3: Explanation of planning and strategies by team leader before search and rescue.

Planning and strategy

It is the stage in which information is gathered to evaluate the current situation and decide. Thus, a timely and efficient response might be achieved. Planning includes defining possible needs, risks and

sources before disaster and developing an action plan according to them. In order to determine strengths and weaknesses of action plan and develop its conducting process, it should be tested in simulated disaster circumstances (Figure 10.3).

In a way, needs and risks are determined according to settlement types of local region. As a result, settlements include not only houses but also anywhere that people exist during disaster. So settlements may consist of followings:

- Apartments and houses
- Industrial and commodities; offices
- Schools
- Religious places
- Hospitals and nursing homes
- Airports

Search and rescue planning besides classification of residents at exercise area, also includes information related to population density, what kind of rescue operations would be needed and the requests for rescue safety (Table 10.1).

Tablo 10.1: Questions to ask during planning phase.

Planning Factor	Questions
Time	• How incident time affects the number of affected people? • Where do victims exist most probably? (at home, working place, bed, on the road, etc.) • Is there enough day light for search and rescue operation? If there is not, how much time is there for sunrise? • Is artificial lighting possible or practical?
Type of human	• Where can the potential victims be in structure? • What can be the number of potential victims?
Type of structure	• What kind of structures are affected? • What is the significance of search and rescue in building? • Is the age of structure important?
Weather condition	• What is the weather condition of present and near future? • How does weather condition affect rescue operations? • How does weather condition affect victims? • How does weather condition affect rescuers?
Hazards	• What is the general hazards in the area and where are they?(natural hazards, dangerous materials, etc.) • Which steps are necessary to mitigate the risks originated from these hazards? • How long would mitigation studies continue? • Which effects can make lag effect on victims?

As a result of making correct analysis of residents living in a possible disaster area; very useful information about time, physical sources and necessary number of people for search and rescue can be taken (Table 10.2).

Table 10.2: Planning questions for sources like personnel, equipment and materials.

Source	Planning questions
Personnel	• Who does live in the area and/or work? • At which hours can these people attend exercises mostly? • What kind of abilities and features do these people have to help in search and rescue operations? • What is the most efficient way to mobilize efforts?
Equipment	• Which equipments do exist in this area for search and rescue? • Where are these equipments? • How can these equipments be reached? • On(or in) what kind of structures do they efficient?
Material	• What kinds of materials do exist for rescue operation or removing debris?

Tactics

Operation leader tries to choose the best tactic in accordance with current information; back up plans are included as well (Figure 10.4).These plans should be flexible if necessary when new information come. Information about the situation guides search and rescue activities. Thus, structure types, its location and severity of damage, environmental conditions and hazards, number of possible victims and their conditions should be well evaluated in determining the tactic. These information should be collected systematically and plans should be updated when necessary.

Figure 10.4: Determining tactic.

Operations

This stage is the stage in which tactics are put into practice. Special technical information and ability is needed for this stage. In other words, this stage is search and rescue stage.

Activity suspension

Operation can be suspended due to several reasons whether it is successful or not .

Evaluation

It is the stage in which attendants are evaluated together with strategy, tactic and method and their processes. It ends with preparing a report including all documents for everbody to form "LDV database" and see its positive and negative sides. This last step would enable to make convenient changes in preplanning and see the developments.

Safety in Search and Rescue

Safety is the fundamental limiting factor which is generally not taken into consideration, even forgotten but it determines when an operation will end. Operation may be successful at planning process; all units and information may be used correctly but situation may result in a negative way if the exercise area is not safe and somebody gets hurt. Thus, a rescuer who works too hard and makes unnecessary mental and physical efforts in order to be fast and efficient, does not make any contribution to the operation. The fundamental concept which says "yes" and "no" to individual behaviours as well as all plan is safety.

Rescuer's safety is more important than the operation. You may decide to stop because of a serious risk or you may change your place with a more experienced and skillful person depending on the environment and circumstances; because safety concept is the fundamental part of search and rescue activities.

As safety level differs according to individuals' abilities, group safety depends on the weakest point of the chain. In terms of individual's point of view, safety depends on individuals' abilities, behaviours, attitudes, capacity to comprehend situation and others' behaviours. As safety is a very flexible topic and consists of many rules, it is considerably hard to determine whether somebody acts unsafely. To decide that a movement is unsafe, depends on personal works, exercises and comprehending the system.

Defining and Performing Risks and Safety Precautions

In search and rescue activities and emergencies, at first safety of working teams, then victims, and then other immediate response services on scene and community should be provided. In order to prevent a secondary disaster (fire, explosion etc.) and pyschological effects of information pollution on society is considered, unnecessary and unhealthful information should not be reflected. Considering that aftershocks, fire, explosion, hazardous substance leakage can be seen mostly on incident scene, it is very useful to get information about these subjects and learn response methods.

Warning!
Especially in a debris work, information about search-rescue and response methods should be given within the commander's knowledge and incident should be evaluated only in terms of response.

Warning!
Types and dimensions of risks may change during incident. New risk evaluation processes should be applied and precautions for harm mitigation should be taken against these circumstances.

Operating Safety in Debris

Safety subject is the first priority of response teams and LDVs. The most important element of safety subject is "pair work". In this system everbody works as at least two people. This simple safety precaution is one of the most important points in all kinds of response situations. A team may consist of 2, 3, 4 or 5 people; but there should be firstly a couple to work as pairs, a messenger, a reporter and a person/s to look out for safety and risks in a team.

Figure10.5: In search and rescue, not to use personal equipment may cause serious hazards. In picture, the volunteer working without a helmet is in danger.

Here, as an individual, a person should not take unnecessary risk without thinking and be a part of problem. For this reason, as a part of LDV team in which a person is reponsible to another person, it is important to obey the necessary rules and put the security of responders in the first place for safety (Figure 10.5). The basic function of pair work is a responder regards another responder's safety. In terms of safety, another important subject is, in parallel with the developments during response, sharing information related to the area and the victim with incident commanders at first. Everybody should be careful while sharing information and information should be shared with a loud voice and in a way that surrounding people cannot hear.

Spare teams should be formed for safety. Teams should be formed as working in shifts and in a way they can offer a 24-hour uninterrupted service depending on the situation. It is important to enable resting and sleeping time for teams; otherwise physically and mentally tired teams' possibility to make mistakes would increase so this would endanger health and safety.

Warning!
A team, which would rest on incident scene, should act according to environment conditions and mental state of society at that moment and avoid behaviours that may cause reactions. Otherwise, this situation might be misunderstood by the relatives of victim. Activities related to resting and meeting needs should be done at main camp, far from incident scene as much as possible. Resting should be for a short time as much as possible on working area.

Safety During Response

Safety priority during response is always given to search-rescue and immediate response teams. While team personnel provides this safety for themselves, they should protect equipments and materials as well. A rescue activity cannot be started without enabling safety of operation area (considering dangers of secondary risks).

NEVER do these!

- Do not work unplanned!
- Do not act on your own!
- Do not work without equipment!
- Do not perform heavy rescue!
- Do not work anxiously and hastily!
- Do not use equipments that you do not know!

Secondary Hazards In Debris

All damaged structures in earthquake might be hazard traps. These are much more in heavy damaged buildings. These hazards should be taken into consideration at exploration stage before rescue activity and while working. These can be listed as followings:

1. Buildings that are not collapsed are not always safe, they may collapse during an aftershock!
2. Damaged neighbour buildings may be dangerous.
3. There may be hazards related to electricity:
   - Metal fences
   - All bare wires
   - Water and central heating installation pipes
   - Metal gas pipes
4. There may be hazards related to fire:
   - Natural gas, LPG, heating
5. There may be hazards related to water.
6. There may be chemical, biological, radiological, nuclear hazards (NBC).

7. There may be industrial raw materials in some part of structures and these materials may react with other chemicals and cause danger.
8. If there are inflammable, flammable, combustible materials, plans about flame cutter usage should be reviewed.

Warning!
Disaster victims that are rescued after responses may leave the area on their own because of risky structure on incident scene. They should not be allowed, the victim should leave incident scene in company with one or two rescuers.

5 Security Phases of United Nations

As it is determined by the security and protection department of United Nations, team members receive trainings on practising and understanding of security practices. There are five security phases of United Nations:

1. Precautionary
2. Restricted Movement
3. Relocation
4. Programme Suspension
5. Evacuation

Important Issues on Search and Rescue

Speech Techniques

In order to respond efficiently, safely and timely in search and rescue operations and emergencies, speech techniques are the most efficient aspect in collecting information about the incident and determining response types by evaluating these information in terms of search and rescue and cause and effect relationship.

Figure 10.6: Important information can be taken by regarding the psychological conditions of disaster victims.

Some information may get by preplanning, some of them may get by other methods like talking to witnesses (Figure 10.6). While talking to witnesses, it is important to get as musch information as possible (For example; How many people live here? Where would they be at this moment? What do you know about building structure? What did you see or hear? Did anybody leave here?). It should not be forgotten that witnesses may suffer a trauma because of the incident so they may tend to exaggerate the potential number or may not remember X incident/building.

Response Ethics

The process in which search and rescue operations continue is a period that society is the most sensitive and intermingled traumas are experienced. For this reason, there are important points to be taken into consideration for each search and rescue personnel who participate in response acvities. These behaviours should continue from preparation process for operation till normal conditions after operation are provided. In daily life, a search and rescue personnel/volunteer should be a good model both with his behaviours and social life in accordance with his trainings.

Some behaviours that may be negative:

- To make unnecessary and/or irrelevant (with private content) information transfer while using communication tools (radio-telephone, etc.)
- To keep communication tools busy unnecessarily
- To wander with operation uniform out of operation scene and/or in daily life
- To act in a way that make people worry while transfering or returning from incident scene (using unnecessary sirens and megaphones, etc.)
- To drive vehicle in a way that threatens others' live while transfering or returning from incident scene
- Not to obey traffic rules and directions
- Not to obey directions of search and rescue officials
- To argue unnecessarily with other officials or civil teams
- To speak too loudly inside the debris/affected area and transfer information
- To give inconvenient information to relatives of the victim which may trigger trauma or cause negative arguments
- To make sure that any precious/worthless findings found in debris are delivered to field chief with a written document according to its rule
- Not to share information related to operation with officials
- To abuse authorization given by govermental agencies
- To act negatively against other teams
- To fight, argue on incident scene or affected area
- To make unnecessary applications except knowledge and abilities
- To give inconvenient promises to relatives of victim
- Not to give necessary information to incident commander or field chief when leaving the incident scene

Procedures for entering the incident scene

The first activity to be done for team leader/leader's assisstant after necessary preparations are completed and deployment process related to disaster or emergencies, is to make information exchange with officials.

Necessary information to be given:

- Team structure,
- Number of personnel,
- Condition of equipments,
- Information condition,
- Logistics information (additional personnel and equipment logistics).

Necessary information to be taken from emergency managers can be listed as following:

- Place and size of main camp and logistics location
- Necessary personnel number to exist on field
- Equipment condition to be used firstly (according to type of incident)
- Search and rescue activity steps and general information about the incident
- Giving information about search and rescue activity planning, how to be a part of further planning and how to make contribution (to get equipment support from local hardware store if necessary or give brief information about tranportation for other teams)
- To determine borders of debris or the area to be worked on (like which floor of building, which direction, determined borders according to coordinates if it is an open air work)
- To get information about whether it is possible to work together with other teams and in this kind of situation, to get information about which team or person has the command system

XI. SEARCH ACTIVITIES

The whole systematic activities done to detect the place and the position of the casualty whose place is not known are called as "search". It is the first step of search and rescue activities. It might take long or short. Searching is a complicated phase that requires proficiency, knowledge and technical competence. Search activity has its own technology and methodology. It might appear as the turning point of the problem as well.

When a decision is taken for the search activity in a specific building or area, the LDVs appointed by LDV leader must search the area for casualties systematically. Monitoring two important activities like detecting potential casualties and applying proper searching techniques are very important to provide more efficient and safe search operation and it would make easy the next operations as well.

Suggestions for efficient search methods

An efficient search method must be systematic, result oriented, avoid from unnecessary repetitions and efforts and provide the records of search results. To provide the efficiency of search activity the points below should be paid attention:

Calling out: It would be useful to start the search by calling out "Can anyone hear me?", "If you can hear me thumb an object on your right or left three times!". When there is a response direct the casualty by saying "stay there" or "wait". Talk to the casualty and get information whether the casualty himself or other people are in need of help.

Being systematical: You should study systematically to ensure that the whole building area is surrounded. In high buildings with light damage bottom up search must be done. Proceeding from corner to corner systematically in the houses would prevent the unnecessary repetitions and provide advantage to the rescuer.

Listening carefully: You should often stop and listen to the sounds, movements and talks.

Working together: Working together would be more proper and safer for two rescuers to provide safety and search the building properly.

Marking the searched areas: Marking the searched areas would prevent repetitions and shows the rescuers position.

Document results: All the recordings must be kept for both the dead people and the casualties trapped under wreckage.

Things to be careful about during search activities

Assessing the number of the people in the damaged building and the information gathered from the casualty's relatives before the search and listen step is an important point. The contradictory information, mental health of the informer and whether the informer is giving misleading information for own sake or not should be paid attention. On the one hand the time for life possibility, thirstiness, lack of air on the other hand the medical situation of the casualty must be taken into consideration. Information should be gathered about the possible places that the casualty might be trapped in.

No matter what is the type of damage the thought of "not alive" for the casualty whose place or situation unknown should not be accepted among the team and necessary explanation should be made to the casualty's relatives and the people around to avoid such kind of thoughts.

Before starting any search activity in a building with light damage first of all the safe open areas and galleries must be decided. The number of the rescuers required for the search should be defined and the selection should be made. The people on the wreckage must be taken out. Silence must be provided in a broad area as much as possible. Security and warning cordon must be provided. The caterpillars around must be stopped. Detecting the place would not mean an easy access to the casualty. During the rescuing phase there might be advantages and disadvantages as well. A point from where the voice is coming might be jointed to an empty but long corridor or the casualty would be closer but the voice would not be heard clearly since there might be absorbent light furniture or structural components.

The calling out might be done through a megaphone. If no megaphone is available, the caller must have a loud voice and must say the sentences clearly in an understandable way. The caller must control his breathing just after calling out. The tone should not be mechanic but reassuring and warning.

None of the team members performing search and listen activities must have a medical problem related to ear. The surface that the ear is placed must be a hard and sturdy structural component. If the back of the surface is known as empty then the fact that voice can be transferred via vibration or acoustic should be taken into account and calling out-listening should be done according to that. The vocal actions like moaning, mumbling, speaking, shouting are mainly heart in acoustic-empty places. Therefore for the listening of the spaces the half of the team must be in or entrance of the space for listening the sounds. Since the sounds resulting from scraping, tapping and rattling can be transferred better with sturdy objects, hard surfaces or materials should be used in listening. Each team member must attach his/her body to the structural component while listening. The position should not require a repositioning. The listener must keep away the left side of his/her chest from the surface not to be mistaken by his/her own heart beats. The materials like watches or

wirelesses must be kept away to avoid confusion before starting the activity. If the search is going to be made in passages or niches the after shock risk factor must be considered and the places that would not create secondary risk factors must be chosen. The team should have practised and made exercises regularly before and should not have any perception problems in eye contact. During calling out and listening activity no excitement should be shown after the first sound and the team should be informed after being sure. If the name of the casualty is known he/she should be called by the name and the term of "alive" should not be used for the casualty.

Search Methods

Search without a device

It is the search activity by the use of physical methods. These might be classified as:

Eye search:

It is the eye search of the team before starting exploration step in the registered area. In this process aiding devices like lantern might be used. The aim of this search is to rescue the casualties around or under wreckage with some simple techniques easily. Therefore it is a timesaving method. Eye search might be performed by the basic search and rescue teams and the people around successfully. While performing this method other risks in and around the wreckage must be defined and necessary precautions must be taken (Figure 11.1).

Figure 11.1: Eye search activity.

Search by calling out and listening

The search team personnel are placed to proper points in the scene. A manager who knows each team member and in contact with everyone takes his/her place. In a certain system (clockwise or anticlockwise) each searcher calls out through the wreckage. It is made

with short and clear statements loudly with bare voice or megaphone: " LDV TEAM IS HERE!..." (A short interval) "CAN ANYONE HEAR ME?" (interval) "IF YOU CAN HEAR ME ANSWER" (If the casualty's condition does not let him/her to respond, the casualty is asked to give a sign) "HIT SOMEWHERE!" (An interval for listening)

The same person calls out two or three times with short intervals. Each team member listens carefully after each shout (Figure 11.2).

Figure 11.2: Search by calling out and listening.

Search with a sign (by tapping somewhere with a hard object)

It is made by tapping somewhere instead of listening. Both of them might be done repeatedly.

- After each tap whole search team listen and evaluate the sounds.
- It is the method to perform when there is no sound. The casualty would not be able to speak or call out loudly enough.
- In such a case the casualty might be asked for using solid components like iron, concrete that would have a sharp and loud sound. First of all the team members direct the casualty by using this type of material. They call, "tap somewhere with the sturdy object, make noise" to the casualty. If the silence is provided the taps might be heard as well.

Hand search

It is the method commonly preferred when there is not a proper device in dark places or unclear water. The places and regions to search must be chosen carefully when touched the findings must be evaluated in the light of earlier experiences. Therefore it should be careful about.

Figure 11.3: Search with seismic and acoustic featured devices.

Search with a device

It requires a separate application. Almost all searching devices must be known by the users very well. The users must be integrated with the devices they use. And this might be actualized with proper exercises in different situations and places.

It is the search activity made with multifunctional and sensitive devices specially produced for searching.

Search with seismic and acoustic featured devices

The devices designed according to the building material and especially used for the localization of the casualties who can not be heard from the surface along with providing the transmission of audio-visual data to the operator are named as "seismic and acoustic listening devices" (Figure 11.3).

Search with visual featured devices

They are the devices that provide the assessment of the conditions of the casualties through observation. GPR, sonar, camera and seismic featured devices can be given as an example to them. They make it easy to choose the search method to be performed and the equipments to be used. They help the evaluation of the situation by sending audio-visual data to the operator.

Search with dogs

Dogs that have been used in searching for a long time generally give good results. They are specially trained for this task. Their skill of smelling is highly developed. And they give reaction to the sounds they heard quickly. The training process of K-9 units is highly long and requires some self devotion. They can not be distracted during the search. They are result oriented and are not distracted by sudden and loud sounds, the other animals, people or foods around.

With this skill they become successful in the search activity. In spite of all these skills they have to act with their trainers during the search. And the trainer must be careful while assessing the dog's behaviours (Figure 11.4).

The benefits of the dogs used in search activities can be summarized as it follows:

- It enables the fast detection of casualties.
- It enables the search of larger areas in a relatively short time.
- They are always under the control of their trainers.

Outdoor Search Methods

They are the activities performed to find the lost one/ones especially in countryside, open areas or forestlands. Therefore generally a great number of search personnel participate in these activities. They are performed with sound, dogs through air or with grid method and sometimes by using technological equipments (GPS, compass, map, etc.)

Figure 11.4: Search with dogs.

Localization of potential casualties

The first step in positioning the potential casualties is gathering information required for special buildings or areas. The search team has to make an assessment to gather more specific information about the damage, do planning and decide the priorities. The detailed information of a structure gives important clues on sheltering places. Even searching the structure by walking around it sometimes provides very useful information.

Sheltering places

They are the spaces where the casualty can hide in or around the damaged buildings. There different types of spaces (Figure 11.5).

Spaces like playing cards: they are the small spaces that happen due to the collapse of bearing walls or floors. Finding them is really difficult and takes long time.

Slant spaces: it happens due to the leaning of the collapsed wall or ground against the outside wall by making small spaces. If the casualty is trapped in such a space it would increase the life chance a great deal.

"V" type spaces: they happen as a result of collapsing the walls in "V" shape. Middle and last wracks lean against the wall outside. Heavy furniture or materials turned upward gather close to the centre.

Exceptional spaces: they are the spaces that the casualty might reach by crawling (ex: under the table or bathtub).

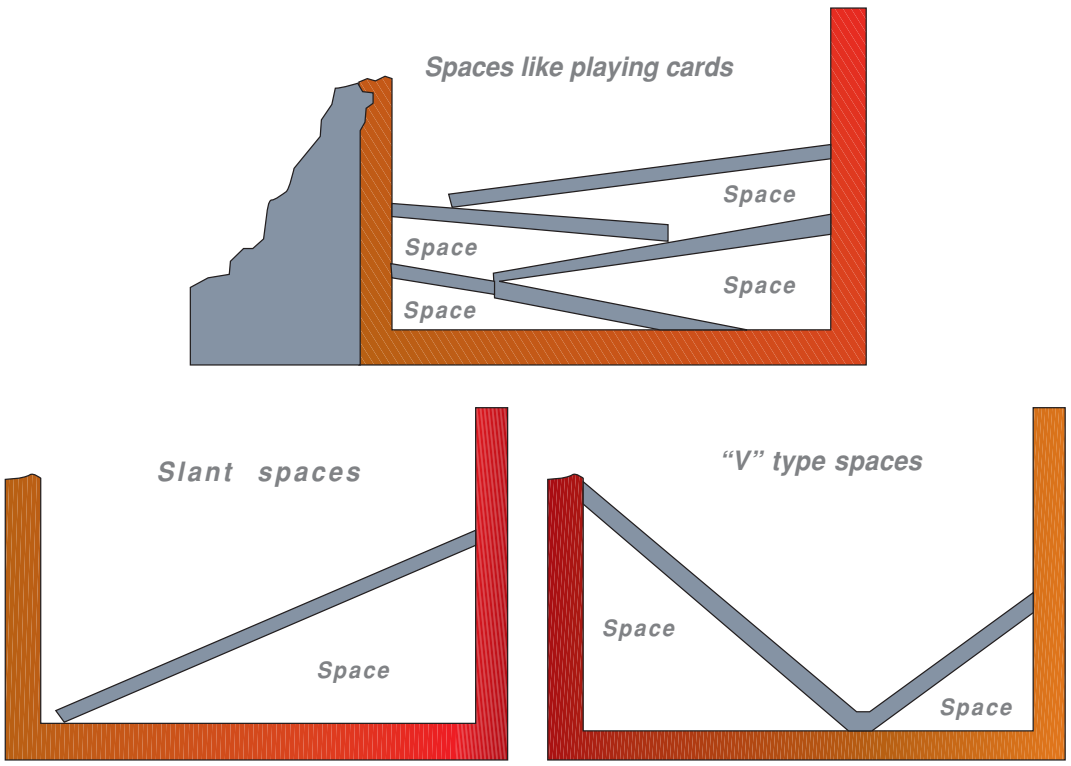


Figure11.5: Hiding places.

XII. RESCUE OPERATIONS

Systematic extrication actions of injured/stuck people in disasters or accidents (response, first aid, fixing, carrying) is called "rescue". The purpose here is to stabilize the condition of the victim or prevent from getting worse, to remove and transport to a medical care unit. Rescue operation is a team work. The team explores, reaches the victim, clears debris, prepares, carries and extricates the victim, leaves markings and make reports.

ATTENTION: Safety of rescuers, victims and other people on site should be ensured during rescue operations.

Simple Rescue Techniques

In accordance with their trainings, emergency response teams conduct responses safely depending on their equipment types. Search-rescue and immediate response methods are based on extensive knowledge, background and experience. Teams should always develop these gains with different trainings, practices and perform them. It should not be forgotten that a right, safe and prompt response only possible as long as there are organized and well trained groups. There are several different methods and equipments in search-rescue and emergency responses. Some of basic response methods are given below.

Warning!
Response teams should not conduct activities which are beyond their knowledge, physical adequacy and response equipments.

Opening Passage

The pits, which are digged by using mechanical, electrical, pneumatic, hydraulic equipments and wide enough to pass and carry the stretcher, are called "passage". Passages can be digged in the form of a triangle, square, rectangle or circle. A passage should have at least shoulder width (40-50cm) in order to enable the rescuer/s to evacuate the stretcher (Figure 12.1).

Warning!
The most important point to be taken into consideration while opening a passage is that there would be dead/live people who are not found or dangerous substances which may react as a result

Figure 12.1: Process of opening passage.

of response operations. Rescuers should work very cautiously and sensitively towards the end of breaking activity.

Passage should not be opened upon aive/dead person or dangerous substances which may react as a result of response, it should be opened at a safe point near one or two meters.

Breaking

A piece of concrete can be broken with the help of chisel, hammer or sledge. But electrical breakers are commonly used at present (Figure 12.2). These breakers both save time and enable efficient breaking. While breaking with electrical breakers, thickness of the piece should be taken into consideration, body weight should not be put on towards the end of breaking activity and rescuers should act sensitively. Otherwise negative events, such as falling of a rescuer into a broken part, can be experienced.

Warning!

There might be live/dead person who is not found or dangerous substances which may react as a result of response under the floor to be broken. Rescuers should work very cautiously and sensitively towards the end of breaking activity.

Breaking activity should not be done right uponlive/dead person or dangerous substances which may react as a result of response, it should be opened at a safe point near one or two meters.

Cutting

Different kinds of materials and debris can be seen on search and rescue operation sites. These might be wood, metal, concrete, fiberglass or plastic. The weight of these materials can be different. Cutting activity can be applied with avaible equipments when breaking is not possible. Mechanical saws and iron cutters, which are among LDVs'

equipments, can be used in these kinds of situations. How to cut materials with which equipments should be practically teached to all search and rescue personnel (Figure 12.3).

Warning!
The rescuer should be careful about the piece to be cut about whether it has a load bearing feature in structure. The possibility of whether the piece has asbestos content and may cause dust while cutting should be evaluated. If there is, material should be carried as a single or a few pieces without cutting.

The rescuer should be careful about not to use cutter beyond its capacity. For example; with a iron cutter which would cut 12 mm iron piece at most, should not be used for cutting a 16 mm piece.

Seperating

Squeezes as big pieces can be seen in search-rescue operations because of different structure materials. Mostly hydraulic and pneumatic equipments as heavy search and rescue equipments are used for these kinds of squeezes (Figure 12.4). Light search and rescue teams, in order to prevent hazards which may be caused by pressure of structure, should support with wedge while seperating two coloumns and girders. If structure is supported with wedges, touching surface of wedges should be strong. This surface should have capacity to bear the load and the floor should be supported if necessary.

Warning!
If back sides and blind part ot the piece to be seperated is not seen, the rescuer should be careful.

Lifting

Different methods and equipments are used to lift different materials on response area in search-rescue operations and emergency responses. If the weight is needed to be

Figure 12.2: Breaking activity in a search and rescue operation.

Figure 12.3: Cutting activity with hydraulic cutter.

Figure 12.4: Cutting activity with hydraulic cutter.

Figure 12.5: Lifting activity with jack.

Figure 12.6: Digging a tunnel.

lifted mechanically, lever should be put at a safe distance and it is applied according to predetermined instructions (be ready to lift! / lift!). It should be supported with timber wedges during lifting. As in seperating activity, touching surface of wedges should be strong and this surface should have capacity to bear the load.

If lifting activity is done with a hydraulic jack, material to be lifted and touching surface should be smooth and strong, be used with support materials if necessary, lifting part should not cause damage and balance disorder in structure (Figure 12.5).

Warning!
Lifting equipments should not be used beyond their capacities. The rescuer should be careful about safety distance and never use it alone for the purpose of support. Besides, the material's touching surface should have capacity to bear the load.

Digging a Tunnel

In order to reach victims safely and immediately in search-rescue operations, tunnels are digged with different materials. In order to evacuate fixed victims under debris safely, a safe passage is opened between the victim and exit by clearing materials(like household furniture, rubbles) within structure.

Tunnels can be opened with different equipments or methods to rescue trapped people because of landslies (Figure 12.6).

Warning!
A tunnel should be digged meticulously and all risks should be taken into account. Equipments to be used for support should definitely appropriate for their function and made from long-lasting material. Activity should be done sensitively and all loads should be calculated in detail. While working, it should be forbidden to intervene in supporting system.

Bucket Chain for Clearing Debris

Different equipments and methods are used for clearing and lifting debris in search-rescue and emergency situations. One of the simplest way to clear debris is to form a human chain to clear rubbles and concrete pieces while working on debris. In this way, search and rescue personnel can clear debris by using bucket or their hands. The position to be preferred for bucket chain is rescuers/volunteers' arranging in a way that they see each other's face. This position would minimize the risk caused by carrying pieces. At the same time, the personnel would observe environmental risks easily because of his position (for instance: falling pieces from neighbour buildings, etc.).

The pieces which cannot be cleared with hands, can be cleared by the medium of construction equipments but in this situation, activity should be conducted more sensitively. A search and rescue personnel to direct the operator and additional personnel to direct and be coordinated by the medium of radiophone are needed while using construction equipments.

Warning!
Using construction equipments is not a proper practice while search and rescue operations still go on. Because construction equipment would cause vibration (shaking) so all unbalanced materials (like debris itself, surrounding damaged buildings) may move and thus this would cause danger for the personnel (in or out of debris) on site. Morever, victims inside the debris would think that rescuers have ended operation and started to lift debris. If necessary, a pre warning should be done. If using construction equipment is obligatory, rubber-wheeled machines should be preferred. Machine should approach the debris very slowly and balancedly. Observers should properly evaluate its effects.

Fortification and Supporting

Fortification is supporting/retaining system which is applied with different materials and methods to create a safe working environment temporarily or permanently in disasters and accidents. The main purpose of fortification is to ensure the safety of both the rescuer and the victim. Fortification is a kind of cage made of wood or metal sticks to support and strengthen weakened walls or floors in constructions and mines at the same time. Filling containers with soil and put them to the abutment or weakened walls of buildings as supportive element is one of the fortification practices. Supporting unsafe building facades is a fortification practice as well. These practices generally consist of concrete structures. But timber materials can be used to support the same parts as well.

Warning!
In serious conditions, rescuers have used concrete bricks or similar materials to fill the gaps and support seriously damaged parts. But these are not acceptable fortification practices and do not exist in rescue trainings. Applied fortification of a damaged building should not be removed in general.

Warning!
There are different fortificaton practices with different materials in search-rescue operations. Using hydraulic, pneumatic and mechanical equipments for the purpose of fortification necessiate additional training. It is essential to give practical trainings to the teams that would have these equipments. These kinds of trainings should be received from Civil Defence Search-Rescue Teams.

Fortification According to Material Type

1. Hydraulic support materials
2. Pneumatic support materials
3. Mechanical support materials
4. Timber support materials

Hydraulic Support Materials: It works as the control of oil in hydraulic oil tank and exerts pressure mechanically on piston. It consists of four main parts:

1. Hydraulic oil tank and mechanical control lever
2. Pressure-resistant hose
3. Telescopic piston
4. Mobile support wedges with different shapes and angles

Pneumatic Support Materials: It works as controlledly transporting air taken from pressure tube (Figure 12.7). It consists of six main parts:

1. Tube
2. Regulator
3. Hose
4. Pressure controller
5. Telescopic piston
6. Support wedges

Mechanical Support Materials: Mechanical support materials are the support materials which have telescopic, square or rectangle metal parts and height can be controlled with hands (Figure 12.8). Consist of three main parts:

1. Floor member (with movable head, fixed or lateroduction)
2. Telescopic piston
3. Controlling or squeezing elements

Timber Support Materials: Timber fortfications are generally made from round or angled trees. Trees can be grouped as hard, resinous and white:

1. Hard trees: Oak, beech, ash tree
2. Resinous trees: Pine, fir, black pine, adler, locust, etc.
3. White trees: Poplar, white horn beech, adler, locust, etc.

There are several fortification methods but light search and rescuers would only use chock and simple retaining methods. Other methods both require more technical knowledge and equipments (Figure 12.9).

The main reason of using wooden materials mostly as fortification is finding them easily. At the same time, they can be taken from both structural and nonstructural elements and they are preferred because they give audio warning before breaking. Morever, they are cheap.

Clearing Debris and Supporting Relation

Natural supporting elements should not be disconnected if it is not obligatory. Even in this situation, they should be disconnected under the guidance of team leader and members as long as it is safe.

Girders, floor parts, doors, stairs etc. that hold debris parts should not be moved. All natural supportives should be used in search and rescue operations as much as possible.

Supporting should be preferred instead of disconnecting structural elements. Clearing these parts significantly lessens safety level. Fortification should not be used for putting structural elements in their previous places. Supporting is only applied according to their position. Wooden fortification should be as short as possible. Safety of fortification depends on where it leans (for instance: when it leans on floor, it depends on floor's

Figure 12.7: Supporting activity with pneumatic support material.

Figure 12.8: Supporting activity with mechanical support material.

Figure 12.9: Timber support practice.

strenght). New fortification options should be taken into account in disasters.

Fortification Practices

Chock (cross diagram)

Chock is prepared as putting woods in a rectangular or square order. Pine, oak or beech trees should be preferred. Wood fibers should be vertically placed to the material. Materials should be prepared as having 5 cm thickness- 10 cm width or 10 cm thickness-10 cm width. Their height should be 30, 40, 60 or 80 cm. Touching surfaces of chock should be as smooth as possible. The block should be placed meticilously. Wedges should not have slippery surface or painted wedges should not be used (Figure 12.10).

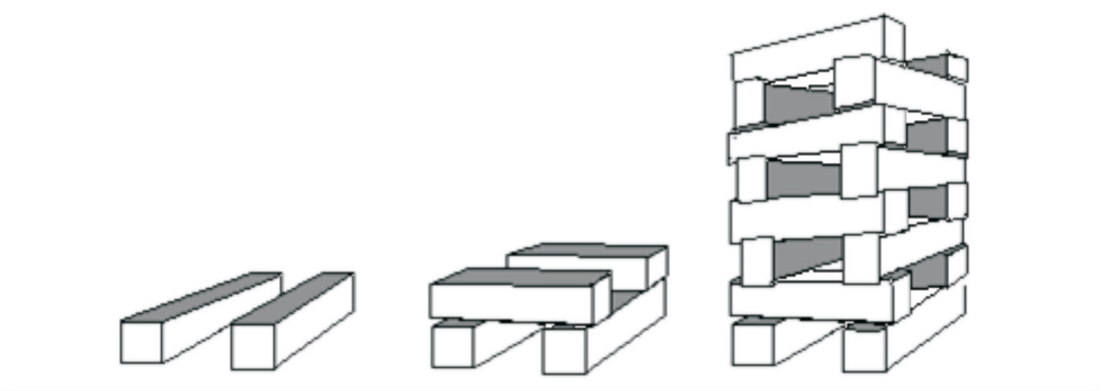


Figure 12.10: Chock Fortification.

Chock fortification with two elements: Chock fortification is prepared as putting pair timbers face to face in a rectangular or square order.

Chock fortification with three elements: It is prepared as placing three timbers face to face. It has higher bearing capacity. It is safer against buckling.

Chock fortification with four elements: It is prepared as placing four timbers face to face. It has the highest bearing capacity. It is safer against buckling and falling down.

While working on inclined surfaces, additional wedges with different shapes are needed (Figure 12.11). These wedges are used to fill gaps between supported surface and fortification and to compact two elements.

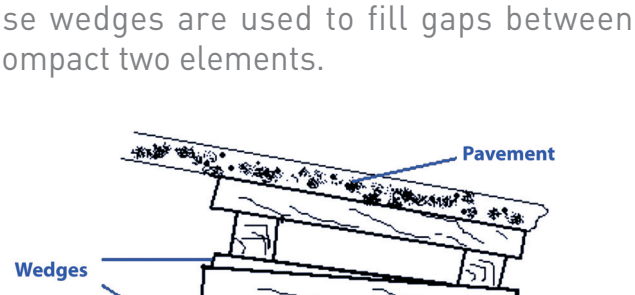


Figure 12.11: Fortification practice on inclined surfaces.

Warning!

In order to prevent movement of both debris and fortification materials, these additional wedges and materials should be stabilized from ceiling and floor parts with nails where there are mobile at most.

Simple supporting from single point

It is used in narrow and low corridors (Figure 12.12). This system should be used for a short time and in places which have minimal risk level. It is generally used vertically but can be used horizontally as well.

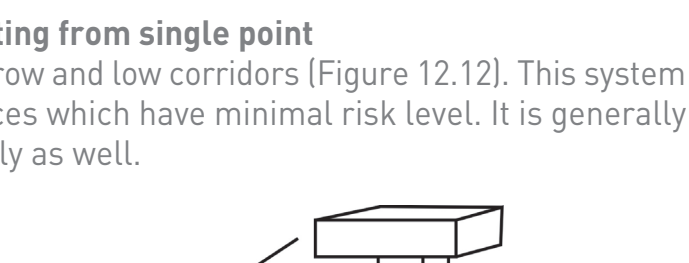


Figure 12.12: Simple supporting from single point.

Figure 12.13: Simple supporting from single point with compaction wedges.

Figure 12.14: Incorrect fortification activity.

Simple supporting from two points

This method is used as placing long supportive wedges on vertically placed wedges in narrow and low corridors.

Compaction wedges

Compaction wedges are additional wedges that are used to fill gaps caused by angle differences, to ensure safety and stability of fortification. Compaction wedges are placed as in a narrow angle (Figure 12.13).

Warning!
Compaction wedges should never be used as a lever.

Underpinning

These methods are used especially on incident scene affected by landslide, in masonry constructions and unbalanced high structural elements in search rescue and immediate response situations. Underpinning activity can be applied with materials like metal, wood or fillable container.

Things to Be Taken Into Account While Supporting Debris

Supporting material should not be made from slippery material or never be used on slippery floor. It should be used only if necessary precautions are taken against slipping. Surface of supporting material should touch weight and floor otherwise with appropriate wedges, contact should be provided. Supportive element is safer with a wide surface. Supportive axis should be vertically placed to weight or floor (in terms of force tranmission). Two supoortives should not be overlapped if it is not obligatory. When they are used, their surfaces should have full contact. Supportive element should be strong enough to bear and resist against weight (Figure 12.14).

Supportive element should not be unnecessarily high otherwise risk would increase as it gets higher so supportive element should have a wide surface. But this is not possible every time. Ideal height is the height which enables rescuer to carry the victim and equipments easily.

Fastening and Carrying

Fastening and carrying is a process including all activities, starts from finding the victim to carrying him/her where he/she can receive medical aid. Methods of finding and carrying depends on the victim's place and type of injury.

Warning!
In many rescue operations, after applying necessary responses, the victim would not be fastened and carried correctly according to injury type. Thus, negative incidents might be experienced like dorpping the victim from the stretcher.

Fastening Equipments

There are many equipments that are used to carry the victim safely and without shaking in fastening activities. These equipments are used to fasten head, neck, arms, legs, spine and all body. Neck collar, stretcher with different sizes, braces, perlons (fastening materials) and blankets are among them.

Neck Collar

It is a fastening element which is used to minimize identified troubles while applying first aid in the neck area and to prevent other troubles within the process after response. It is an adjustable material and enables other medical responses in search and rescue operations.

Stretchers

Setretcher is the most appropriate vehicle to transport injured victim/casualty who has different injuries(and need to be carried on stretcher) to collection station or ambulance. Standard type stretcher and special stretcher are used in civil defence services. Improvized stretchers are used in emergencies as well (Figure 12.15).

Figure 12.15: Canoe stretcher.

Standard Stretchers:

Height	: 2.20 cm
Width	: 58 cm
Iron legs	: 12X10 cm

Special Stretchers:

- Gurneys are the stretcher type which have telescobic legs and side barriers.
- Roll on-roll of stretcher (for ambulance) has wheels and enables carrying the patient to ambulance.
- Combination stretcher can be folded while the patient on it and can be used in this way.
- Scoop stretcher has two parts. When these parts are combined, it is locked automatically. It enables the patient to be taken easily; the patient is taken on stretcher as dragging on both parts and without shaking.
- Vacuum stretchers are made from special plastic material including special granules.
- They can be used as brace. The patient is taken on laid strecher. Its air is sucked in with the help of an air ejector, wraps the body of the patient and becomes rigid.
- Basket stretcher is like a boat. The patient is laid into it and fastened. It is used when taking the patient to helicopter or evacuating the patient from muddy soil.
- Canoe stretcher is a hollow stretcher which looks like a canoe and enables transporting the patient on mud and water as well.
- Inflatable stretcher is mostly used in water and sea accidents.

Braces

They are used as first aid materials in search-rescue operations and accidents to fasten broken arms, legs and fingers. They can be made from different materials like wood, plastic, plastic-metal combination, rigid cardboard, inflatable plastic. They can be both adjustable or produced according to body (for example finger braces may be 5-10 cm lenght).

Perlons

These are static materials which are produced with special machines, have different colors and lines according to their weighing capacity and no flexibility. They are used in search-rescue operations to fasten the victim and to establish evacuation system (station).

Perlons can consist of tubes or single piece. They are at different width and generally each line on backside has 500 kg weighting capacity. They are generally used in way stations.

Blanket: They are at different sizes and used for fastening and evacuating. They can be changed according to the victim's condition. They can easily be found on disaster

scenes and provide great convenience while taking the victim out of narrow and inclined places. At the same time, they preserve body temperature of the victim during mountain and open field search-rescue operations and minimize the possible negative effects (crush, rope cut, etc.) caused by stretcher and rope-perlon system while fastening.

Improvised Methods and Equipments for Fastening

In major disasters and emergencies, response teams would not have enough fastening and transportation elements or they may finish because of usage. Thus, all conditions should be evaluated. Debris and other damaged structures or all structual and nonstructural elements can be used both for fastening and ancillary equipment. Having or organizing these equipments are directly related to creativity of the team. Possible fastening elements to be used on disaster scene can be listed as below:

- Carton materials
- Curtain rods
- Legs of table-chair
- Curtains-veils as lacing elements
- Pieces of cloth

Materials to be used for transportation;

- Doors
- Tables-chairs
- Blankets

Transportation Methods

Emergent medical transportation methods: In all situations necessiate immediate response and if there are hazards related to fire, explosion, gas evolution, flood, electricity, both rescuer/first aid applier and the victim are in danger. In these kind of situations, the victim should be immediately taken away. Emergent transportation of the victim can be with the help of one, two or three people. Besides, there are necessary applications to be taken into account while placing the victims on stretcher and transporting them to a safe area, directly to ambulance or medical unit.

Emergent transportation with a single person

Dragging with a blanket or carpet: The victim is placed on a blanket or carpet. His/her arms are put on his/her chest. The blanket or carpet is wrapped as a swaddle. The victim is dragged from his/her head part.

Pulling by holding the cloth: The head and body of the victim is placed smoothly if there is not a blanket or carpet. The first aid applier holds the victim's collar under his/her neck.

Figure 12.16: Cradle metho.d

Transporting as walking backwards: Rescuer stands behind the victim. He/she puts his/her hands under the victim's arm pit and holds wrists. He/she carries the victim as walking backwards.

Transporting as crawling (tied-hands crawl): It is used to evacuate the victim from the places full of gas and smoke or under debris. The victim is laid on his/her back and his wrists are tied with a piece of cloth, tie or belt. The first aid applier falls on his hands and knees, put the hands of the victim over his/her neck and crawls.

Removal downstairs method: The victim is laid on his/her back; rescuer puts his/her hands under the victim's arm pit, holds his/her cloth tightly or hand wrists on his/her chest. Head of the victim in placed on chest; rescuer takes the victim downstairs by crawling backwards slowly.

Transporting the victim by sitting and sliding backwards: It is used to evacuate the victim from the places full of gas and smoke or under debris. The victim is laid on his/her back. Rescuer sits behind the victim and opens his/her legs. He/she pulls the victim and holds his/her legs high under his/her arm pit. He carries the victim as sitting and sliding backwards.

Transporting the victim pick-a-back: If the victim is conscious and able to hold on using her arms, rescuer takes the victim on his/her back (like carrying children on back) and removes from dangerous area.

Cradle method: Rescuer slips his/her arms under the victim's thighs and shoulders and takes the victim to his/her arms (Figure 12.16).

Human crutch method: This method is used to move victims who are conscious and able to walk with some assistance. Rescuer stands near the victim, holds him/her around the waist and uses his shoulders to support the victim's arm, holds his/her clothers firmly while he/she

rests his/her body weight on rescuer. So the rescuer walks together with the victim.

Emergent transportation with at least two people

Two handed seat: It is used when the victim is not able to use his/her arms. Rescuers squat down on either side of the victim and pick up. They reach under the victim's shoulders and under their knees. One of them graps other rescuer's wrists. From the squat, with good lifting technique, grasps the victim's cloths if possible and stand with the command of one of them (Figure 12.17).

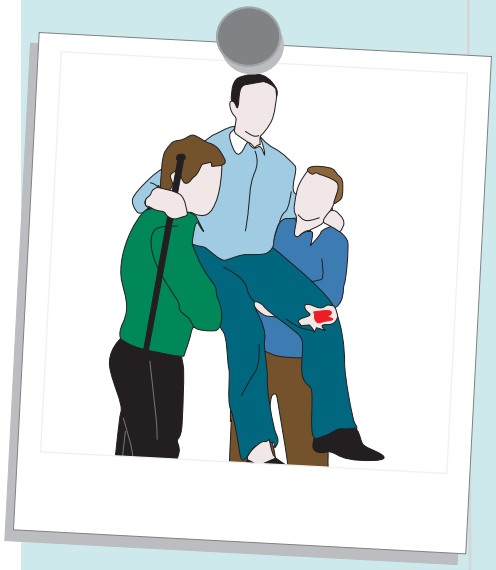


Figure 12.17: Two handed seat.

Two persons drag: Both rescuers stand on either side of the victim's chest. The rescuer's hand nearest the feet grab's the victim's wrists on their side of the victim. The rescuer's other hand grasps the clothing of the shoulder nearest them. The rescuers place their hands around the victim's waist and walk.

Cradle method with two persons: Two rescures squat near the same side of the victim on their same knees. Rescuer 1 holds the victim's head and waist while the other holds his/her hips and feet. Asone of the gives the command the victim is lifted on their knees and then they rise to a standing position. He/she rests his/her body weight on rescuer and walk.

Two persons carry (by arms and legs): Both rescuers squat down on either side of the victim on the same leg. Rescuer 1 squats at the victim's head and grasps the victim from behind at the midsecton. Rescuer 2 squats between the victim's knees, grasping the outside of the knees. One of them gives the command, they rise to a standing position and walk.

Chair carry: The victim is placed on a chair. The rescuer at the head grasps the chair from the sides of the back, and the other graps front of the sitting place. The rescuer tilts the chair back onto its rear legs with a 47 degree angle and the victim rests his/her head and shoulders on the rescuer's chest (Figure 12.18).

Figure 12.18: Chair carry.

Transporting with a stretcher: It is the safest transporting method. Meticilously placed victim can be carried with two, three or four people. There are some rules to be obeyed in order to transport victims, who cannot walk, in a safe way without giving any harm (Figure 12.19).

Putting the victim on a stretcher- carry 1: Rescuer 1 stand on the right, 2, 3, and 4 stand on the left side of the victim. Firstly, rescuer 1 takes the victim near himself by grasping his/her cloth. Rescuers 2, 3 and 4 place their hands under the victim's back while standing on their same knees. They pick the victim up their knees with the help of the first rescuer. Then, they lift the victim together with the command and approach the stretcher. Rescuer 1 drags the stretcher under the victim and the victim is laid on the stretcher.

Putting the victim on a stretcher- carry 2: The victim is laid on his/her back. Three rescuers take the victim between their legs. One of them grasps head-neck and one of them hips while the other grasps the victim's ankles. With the command of the rescuer standing at the head side, the victim is picked 25-50 cm up between the rescuers' legs. Rescuer 4 drags the stretcher under the victim between their legs while he/she is standing on air. Again together with the command, the victim is placed in the stretcher carefully. He/she is fastened and transported.

Figure 12.19: Transporting with a stretcher.

Blanket drag: The blanket is laid longitudinally near the victim. Then it is rolled. The victim is carefully placed on the blanket while one roll is under his/her waist and the other under his/her knees. The rolls are opened by pulling and two or four rescuers carry as holding the sides of the blanket. Or the blanket is rolled longitudinally. By grasping the victim's cloth, he/she is half turned and the blanket is placed under his/her back. Then he/she is turned to opposite direction and placed on the blanket. Two rescuers open the rolls on both sides so the victim is placed on the blanket and carried.

Points To Be Considered While Transporting

There are important points to be taken into account while transporting the victim. Especially if there is not any possible dangers on incident scene, the patient or casualty would never be moved before detailed examination. If there is the possibility of spinal injury, the casualty would never be moved, his/her spine should be fastened with braces and laid on his/her back in stretcher. It should not be forgotten that the casualty would remain paralysed throughout his/her life because of spinal injuries.

The head of the victim should be fastened in neck injuries. Neck collar should be put on if there is. If neck collar does not exist, materials like sand bags, folded blanket, coat or waistcoat should be placed on both sides of his/her neck. The victim should not be moved and should be certainly carried with a stretcher or improvised stretcher (door, two timbers, surface of the table, etc.).

If there is the possibility of waist injury, the victim would never be carried as bending his/her waist down. He/she should be carried as standing still with the help of three people and should absolutely be carried with a stretcher or improvised stretcher. If the victim is unconscious or has respiratory problem, he/she may go into coma or vomit. In order to open his/her airway, the victim/casualty should be carried in side-lying position.

Giving Optimal Position in Transportation

If there are not any dangers for the victims and helpers in accidents, first aid should immediately be applied on incident scene. If it is not necessary, carrying the victim may cause both time loss and give more harm to the victim. Firstly, the first aid applier should examine the victim and then give the most optimal position to relieve the victim and prevent other injuries until he/she arrives medical care units.

The most frequently used method in first aid applications is fixed side-lying position. This position is applied to victims who are unconscious, have respiratory problem, go into a coma and vomit. It enables the victim to breath easily.

In order to apply this position, the victim is laid on his/her back. His/her one leg is bended close to his/her hip. The arm on the side of bended leg is put on his/her body; the other arm is put under his/her hip. He/she is dragged by holding his/her shoulder and belt and tilted. The arm under his/her body is withdrew a bit. The head is moved back a bit and the other arm is bended; his/her hand is put under his/her cheek.

The victims who have broken hip, spine or leg and who are applied CPR, should be laid on his/her back. The victims should be laid straight, their feet are raised 30-40 cm in case of shock and fainting. The victims who have skull and brain injury should be laid as their shoulders are raised a bit and in decubitus position.

In case blood or clear liquid(cerebrospinal fluid) comes from the nose or ear after taking a blow to the head, the victim is laid on his bleeding ear. Cotton or a piece of cloth etc. must not be blocked to the nose or ear. The victims who have cheek injury, open chest wound and broken ribs should be turned to half sitting position. The victims who have broken rib and arm should sit up straight.

Forms

It is very important to give reports about the situation and avaible sources in every step of the response activities. There would always be efficient information flow in order to distribute the sources efficiently and enabling the emergency teams to use them approriately (Table 12.1).

In order to prevent the possible problems while delivering the victims (dead or alive) to formal organizations, who are rescued during search and rescue operations or later on, necessary official reports and records should be immediately prepared and signed by the authorities. It is important to give the following information in reports:

- Name-surname of the victim
- His/her age
- His/her sex
- Type and level of injury
- Figure description (hair, eye, skin color)
- Timeof evecuation from dangerous place
- Delivered personal belongings
- Name and place of the medical institution, where he/she will be sent
- Plate of the car
- Name information of deliverer/receiver person

The process is the same in found precious/worthless personal belongings, too. It is important to write a report in these kinds of situations. This report can be written by the official authority of working site(debris, incident scene) or security forces like police and gendarme. The

following materials would be the subject of this report:

- Jewelry
- Wallets
- Safe deposit box
- Identity and smilar documents on the same level
- Guns and smilar equipments
- Drugs
- Photo albums or smilar belongings

All reports should be prepared as three copies and signed. One of these copies is given to deliverer person/unit, one of them to receiver person/unit and the other is given to offical authority on site or at command center.

Table 12.1: The purposes of LDVs' Forms.

Form	Purpose
Damage Assessment Research	These are the forms identifying all hazards including given below. Fires It is important to determine priorities, structural damage, injuries and deaths, avaible transportation ways and formulate action plans.
Group Condition Report	It is filled by the functional group leaders. It is used to watch assigned personnel and follow group responsibilities.
News Form	It is used for the communication between the command center and groups. Sent message should be clear and short and include the given points below: Additional sources that are needed; • Special information • Current situation information • Finished/unfinished assignments
Incident-Situation Assessment	It is used for the situation assessment. Includes necessary information to assess all situations.

International Building Marking System

The aim of the building marking system is to gain time and labour force, to provide specific information regarding assessment and operational results to ensure optimal coordination on a work site in which different teams work at the same time. These markings would be applied in a distinguishable colour, big enough to read and would not be unnecesarily used.

According to International Building Marking System, the marking indicates that stated team/teams have worked on debris and the current condition of it. Other teams decide what to do according to this marking. The marking must certainly be applied.

Rules Of International Marking System

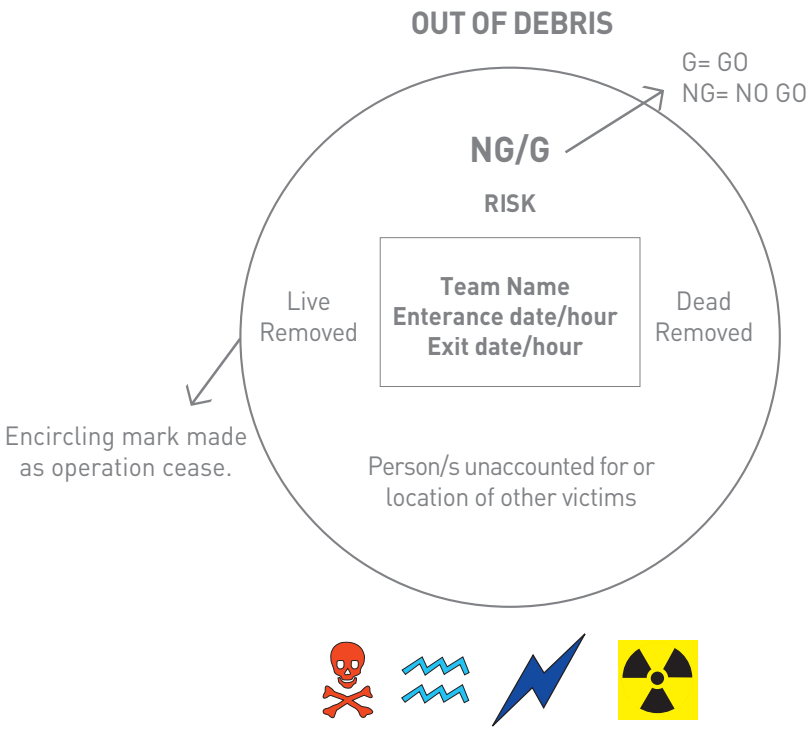
The marking, consisting of a 1 X 1 meter square box, should be placed near the point of entry on the exterior of the collapsed structure that offers the best visibility before entering the building (Figure 12.20). Name of the team is written in that square (for example LDV). Under the name, entrance date and time is written. The team, which searches the building, writes "No Go" if it is deemed unsafe to enter, for the safety of next team. They write "Go" if it is deemed safe to enter.

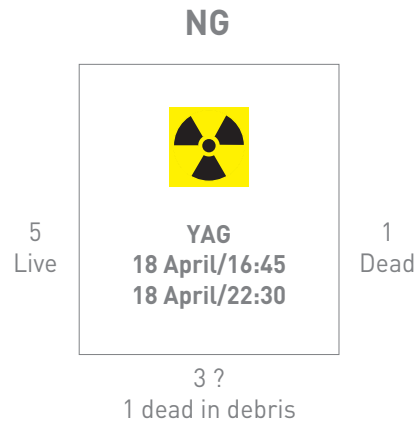
If the team has come across a hazard or hazardous material related to this building, writes these hazards on top and outside of the square. Extricated live victims are written on left, removed death victims are written on right side, undefined (?) and missing persons are written on bottom.

These numbers can change during rescue operation. Each time, the old number is corrected and new number is written. (If the searched area or the number of people living within the building is known definitely, (?) mark is not written). When the USAR team has completed work on the structure to its capacity, a circle is to be drawn around the entire marking. After the all work on the structure has been completed and it is confirmed there are no more victims, a horizontal line is to be drawn through the entire marking. This marking means that there is no working team inside the building and all search and rescue activities have ended.

Important Warning!
In International Marking System, drawing a circle around the entire marking after all work has been completed is the responsibility of only official search and rescue teams. Volunteer teams complete marking without drawing a circle because searching of all gaps and extrication of all victims are officially within the responsibility of heavy search and rescue teams. Drawing a circle in a way means that the debris is closed to work but volunteer teams have not such a kind of responsibility.

There are other markings to define that this activity has been finished and to give the results, too.





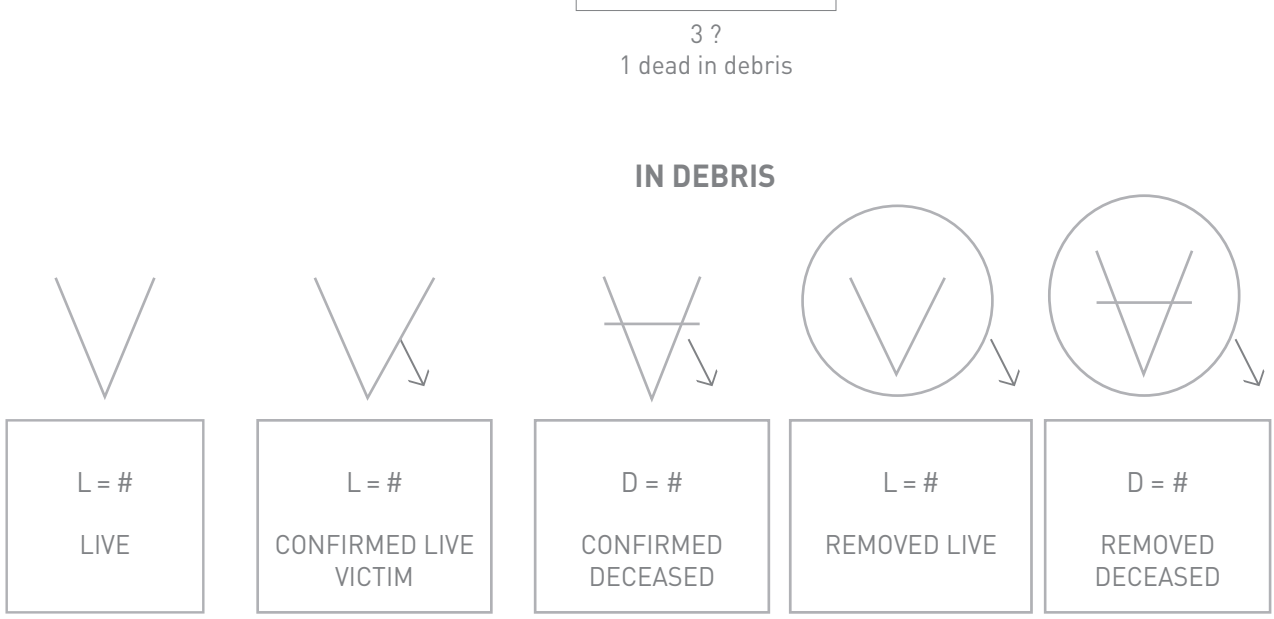


Figure 12.20: Internatonal Building Marking System.

Ending Search and Rescue Operation

If the decision of ending or maintaining the operation is an authorization given to the coordinator or the team leader beforehand, initiative belongs to these people and their decisions are obeyed. But if there is enough time, decisions are evaluated by taking the opinions of supreme board, the supreme board chooses a person and the decisions are explained by this person.

Principles of ending-maintaining the operation

- Physical and technical adequacy of team
- Responsibility borders (official regulations, authority borders, borders of life threatening risk, etc.)
- Total response adequacy for operation (number of teams and their capacity according to incident)
- Public expectations
- Approach of local community

Demobilisation Procedures

After works on disaster scene and response area have ended, necessary procedures to be applied before leaving are given below:

- To control if there are any teams or materials left on site or in debris
- To give information to official crisis center authorities (on site and next destination)
- To establish a departure schedule
- To determine departure time
- To determine return route
- To determine order of transportation convoy
- To determine communication system to be used during transportation (phone-radiophone)

XIII. TERRORIST INCIDENTS AND BOMBING

The word "terror", which has its origin in Latin as "terrere" means "to frighten" or "frighten to death". According to the first article of 3713 numbered Anti-terro law, "terrorism" defined as: "terrorism is any kind of act done by one or more persons belonging to an organization with the aim of changing the characteristics of the Republic as specified in the Constitution, its political, legal, social, secular and economic system, damaging the indivisible unity of the State with its territory and nation, endangering the existence of the Turkish State and Republic, weakening or destroying or seizing the authority of the State, eliminating fundamental rights and freedoms, or damaging the internal and external security of the State, public order or general health by means of pressure, force and violence, terror, intimidation, oppression or threat".

Terrorist incidents may have new destructive methods as well as different mechanisms including chemical, biological and explosives. Giving a full response to a terrorist incident necessiates an efficient coordination and planning among all organizations including police, fire department, local and national institutions besides assistant services. Different assignments should be given to each organization long before a potential terrorist attack has happened.

Giving an efficient response to terrorist activities is based on a comprehensive planning and cooperation among the organizations. Organizations should discuss the scope of authority and solve this issue long before. After forming a plan, it should be regularly updated to reflect changes related to sources, population, terrorist activities and potential objectives.

A terrorist attack in a metropolitan, may have serious results, this may cause a problem that strikes medical units so great health problems and medical consequences may occur; thus, there should be continous contact with the national institutions because of their additional resources.

Incident Command

Most of the principles related to managing terror incidents are the same as managing mass injury incidents. The first thing to be done in potential terror incidents is to provide the security of the area and determine the severity and nature of the incident. Additional explosives or materials would be placed on incident scene in order to hurt rescuers. The security of incident scene should be ensured not to give any harm to survivors or medical personnel. Primary or secondary circles should be established and their security should be ensured. An additional circle should be established in the direction of wind if it is necessary. Early response of support service units, relief and local organizations into planning process is logical. After identifying potential danger, necessary protective equipment type should be determined. More importance should be given to protect especially rescuers, victims and decontamination issue.

After identifying the area that is going to be decontaminated, the rescuer should wear protective clothes before starting to work on effected site. The first thing to do is focusing on support maintenance by showing extra importance to aggressive airway management and decontamination. Providing environmental security, neutralisation and decontamination can be applied by support institutions simultaneously. After completing the first triage, primary or agressive support is given according to the victims' conditions and available facilities. The patients should be decontaminated and transported as soon as possible to an area in which the reason of the incident is known (Figure 13.1). After providing a safe and clean area, physical response is completed. A full response is completed by recording, making analysis and investigations, too.

Figure 13.1: Providing a safe and clean area is important in terrorist, bombing and chemical incidents.

Conventional Explosives (Bombing)

It is difficult to provide nuclear, biological and chemical explosives so conventional explosives are more likely used for the purpose of a terrorist attack. Because they are easy to find and because of knowledge, to provide or produce conventional explosives is more common comparing to other materials.

Normally, explosives are stable materials which expand quickly when they are exposed to chemical reaction.

Explosives cause damage by primarily causing a major increase in athmospheric pressure. The first shock, which is named as positive pressure wave, is the sudden pressure increase as a result of explosion; and then negative pressure wave fill the place of the first pressure wave.

Explosives are grouped as low and high class. Low explosives burn quickly. The first low explosive, black-powder, is used for developing smokeless gunpowder and driving force of some rockets. Nitrostarch, nitro cellulose and commercial fireworks can be counted among low explosives. High explosives are more stable comparing to low explosives and they need a crash or shock for explosion.

Indoor explosions mostly cause more deaths. Strong surfaces reflect and unit shock waves so destructive power increases. Smilarly, explosions through a passage or corridor has greater effect than in normal because power gathers in a small area.

Explosion injuries can be grouped as primary, secondary or tertiary. Primary explosion injuries occur as a result of great pressure change because of explosion. Mostly, bowels, nervous system, cardiovascular system, ears and lungs get damage because of primary explosion. Cardiac injury, oesophagismus rupture, hemothorax or pneumothorax, bowel perforations, arterial gas embolism or sudden/ delayed GI injuries should be treated clinically.

Secondary explosion injuries are occured as a result of scattering sharapnel pieces and other materials during primary explosion.

Tertiary explosion injuries are occurred because victims are scattered around as a result of high pressure caused by the explosion. These injuries may include a wide traumatic etiology spectrum like in falling incidents.

Suicide bombers usually carry a small amount of low explosives tied to fuse secretly and search for a wide victim population to explode. Potential places are; sport centers, restaurants, night clubs or other places open to community. Sharapnel results in a wide injury area. Possibility of bullet injury should certainly be kept in mind. Rescuers should be very careful to reach to a potential suicide bomber even though he/she is inactivated.

Chemical Substances

Chemicals are firstly used in 1st World War widely and caused daramatical consequences for the unprepared alliances. Although they are less lethal comparing to conventional explosives, chemical weapons can affect a big number of alliance in a very short time and make them inactive. Chemical weapons are described by the United Nations in 1969 as, "weapons that work principally through toxicity, which means chemical action on life processes capable of causing death, temporary incapacitation or permanent harm on humanbeings, animals and plants".

Because intermediate substances and documents about their preparation are easy to reach, chemical weapons are more likely to be used for terrorist incidents comparing to nuclear or biological weapons. Besides, potential terorrists can easily find a chemical substance production facility, sabotage there with chemical or conventional explosives and cause toxins to spread with the wind. As a result, emerging environmental pollution may enable several terrorists to achieve their aim to create fear, rush and panic in society.

Protection Against Chemical Substances

General wrong opinions related to NBC substances can be listed as below:

- Do not happen to us.
- KIS agents are lethal. We all die whatever happens.
- There is nothing we can do.

NBC defense activities against these opinions should be conducted according to:

- Avoidance,
- Protection,
- Decontamination.

Suggestions and Protection Precautions

1. People should act according to siren, warning and alarm signals (Figure 13.2).
2. Personnel should be trained.
3. Security personnel should be equipped with NBC equipments and materials.
4. Mass protection planning should be prepared.
5. Functionality of shelters should be tried.
6. Door and windows with PVC system should be preferred where mass shelters do not exist.
7. Impermeability of doors and windows should be provided where sealed doors and windows do not exist.
8. NBC identity of the personnel should be controlled at the gateway.
9. Parcels and letters should be controlled with high uv light (to kill microorganisms and spores).

Figure 13.2: Protection from chemicals.

Precautions Against Poisonous Gases

Nerve gases (Tabun, Sarin, Soman)

These are very poisonous gases that inactivate the personnel by giving damage to nervous system and causing paralysis. Even a little amount may cause death. During the recent years, double nerve substances (GB2, VX2) which become dangerous as they are combined, are produced as well.

Things to be careful about in nerve gases intoxication: The first aid and treatment must be very quick because of their sudden effects. It should not be forgotten that cleaning is very important. Regurgitation should not be applied when intoxication through digestive system occurs.

Protection precautions against the threat of nerve gas vapor: If there is the possibility of nerve gas existence, a mask is put on and people should go to shelters immediately. In case nerve gas is taken through the respiratory system, the victim should stop breathing, put on a mask and inject atropine within a minute in order to survive. Atropine should only be injected in case nerve gas is breathed. To protect against permanent nerve gases,

the skin should be cleaned within a minute where fluid drops are touched. Cleaning activity should be applied in a way that only dirty areas are cleaned as pinching and liquid should not be spreaded. After cleaning cut and scars with tenture d'iyote, they should be taped. Gas can easily get into body through these kinds of areas. After completely cleaning, the skin is washed with skin cleansing kit, if there is no kit with bleacher (5%), if there is no bleacher, with plenty of soapy water; later on it is disinfected with 95% ethyl alcohol. Then it is washed with soapy water again. In case nerve gas is taken through the respiratory system, the patient should not be regurgitated, artifical respiration should be applied and transported to the hospital as soon as possible.

Vesicants (Mustard, Lewisite, Phosgene Oxime)

These substances are called as vesicle gases. They affect the skin, respiratory system, digestive system and eyes. They are generally used as liquid. When these liquids or their vapors are touched, they burn the skin, eyes and respiratory organs and cause deep wounds consisting 1-1.5 liter suppuration and inflammation. These wounds are not lethal but they take a long time and difficult to heal. When they are not treated, they cause death because of infection. Vesicants are permanent and their danger distance is 10 km under the wind. Some kinds of them are scentless; some kinds have mustard, garlic, geranium, red cole or bitter almond scents. The effects of vesicants occur sneakily in a long time.

Protection precautions againts vesicants: If there is the possibility of vesicants, immediately a mask is put on, protective equipments are worn. People should go to shelters if there are. Eyes are cleaned in case of vesicant contact.

Choking Gases

These are chemical gases which affect lung tissue and especially cause pulmonary edema.

Protection precautions against choking gases: If there is the possibility of choking gas, immediately a mask is put on. People should go to shelters if there are. The skins of impacted people is washed with plenty of soapy water within a minute. If there is eye contact, eyes are washed with plenty of clean water for 5-15 minutes. If clothes get dirty, they are aired.

Blood agents

Blood agents are generally thrown in the form of gas or vapor and get into body through respiration. They prevent cells to use oxygen in blood and they are the chemicals that block carbondioxide exchange between blood and tissues. They reduce breathing activity significantly. These gases poison circulation, respiration and central nervous system. Protective mask is enough for protection. The personnel who transport liquid should wear protective clothes. Influence rate is short, volatility is high and it is lighter than air in gas form. The people breathing blood agents may lose conscious in a couple of minutes and even die.

Protection precautions againts blood agents: If there is the possibility of blood agents, immediately a mask is put on. People should go to shelters if there are. The person that has breathed the gas is taken out and artificial respiration is applied. He/she is given oxygen and make smell of nitrile ampule. Dirty materials are not touched; if they are touched, the skin is washed with plenty of hot soapy water. If there is eye contact, eyes are washed with plenty of clean water for 5-15 minutes.

XIV. EXTRAORDINARY CONDITIONS

Extraordinary Conditions And Their Common Features

Extraordinary condition can be defined as any breakdown and cut in social order and daily life and being incapable of achieving its functions.

These conditions can cause loss of life and property and also these conditions cause individuals to have some difficulty in maintaining their basic needs. Any failure or damage in these needs might stop vital activities. Also the existing social order might not answer their needs; in this instance some precautions are needed in order to support social order. These precautions can change according to the existing situation, its effect and the location it occurs. In some cases, it is possible to eliminate extraordinary conditions; however it might sometimes cause a fall in social order. The main topic of this training is extraordinary conditions which cause a fall in social order; because during these conditions, all the parts of a community are obliged to use some alternative ways to maintain their needs.

Extraordinary Conditions and Their Common Features

Extraordinary conditions, in other words, disasters and emergencies can occur in very different ways; however they have some common features. These features can be listed as:

- It can damage life resources and infrastructure.
- When it occurs, it causes a shock effect.
- Whereas it is possible to predict when it will occur, a part of it cannot be predicted.
- Some of them occurs suddenly, some of them develops slowly.
- At the first moment, emergency action cannot take place.

Humanitarian Needs and Extraordinary Conditions

It is necessary to provide some basic needs in order to survive during any extraordinary condition. Even if these are accepted as physiological needs, it is necessary to pay attention to psychological needs too. While struggling in order to survive during any extraordinary condition, people should not aim at getting over it in some way but should aim at minimizing physiological and psychological influences after an event. Stated in other words, not suffering from any permanent or longtime psychological effect is as important as not being injured or becoming ill after an earthquake.

It might be easier to meet physiological needs; because these are easily observed. It is comparatively easy to meet and detect some needs such as food, water, sheltering, toilet and hygiene; however even if some needs such as security, self-respect, compassion are not observable, these have a vital importance. Every individual should be aware of encountering these needs after an extraordinary condition such as an earthquake. They should remember that they might not have possibilities after any disaster they have in their normal lives. Needs can be provided to the best of negative conditions caused by an earthquake until returning to their normal lives. To be aware of it is going to increase one's survival ability.

An earthquake has a high potential to turn into a disaster around the places near to human settlements. If an earthquake causes a major disaster, it might be too difficult to survive after earthquakes. We should take some precautions since then the starting point of an earthquake which is an unusual condition, up to turning into normal life. The important point during the first hours after an earthquake, is precautions that should be taken by individuals rather than organizations.

Survival After a Disaster

- Buildings might not collapse, but nonstructural objects, materials inside buildings and in surrounding area can cause a damage on you. If you are hurt or injured, primarily secure yourself.
- If there is not any serious injury and you can walk, start to evacuate your present place by checking people around you and supporting.
- Check everywhere before and during evacuation. Look quiet corners, especially children choose these kinds of places.
- While leaving buildings, you can need a lighting; but be sure whether there is any probable gas leakage before using igniter items such as a match and a lighter or an electrical appliance.
- While evacuating buildings, turn valves and power switch off.
- If prepared before, take your emergency kit with you.
- You might not meet swiftly because everybody tries to save his/her acquaintances after an earthquake. So if there is any injured one in your own building and side building, help them.
- Give support to voluntary, professional, trained and organized teams.
- If there is not any injured one in sight, search whether there is anyone under debris or not.
- If you hear a sound, speak with this individual under debris and try to keep his/her morale high.
- Until search and rescue teams come, do not leave debris that you detect someone alive.
- After teams come, withdraw and help if they want your help.
- Meet people who come out of buildings and walk in a safe place appointed before, otherwise come together by finding such a place.

In open areas In open areas, we should primarily go away from buildings, towers, water tanks, transformers and stand away from them. You should go to appointed meeting place; if there is not, you should find a safe open area. Try to get involved in search and rescue organizations or try to give support to them.

Returning to living place: After leaving the area that we live, aftershocks lose their strength and main shock passes and as a result of these you feel safe and you may want to return to your building. If you do not see necessary conditions to stay again there, you should start a work in order to find alternative living areas.

- Check your building again.
- Define dangers and take precautions.
- If there is any injured one and you know how to perform first aid, perform first aid treatment and try to evacuate the building safely.
- Transfer injured ones if available by ambulance if not by other vehicles. If they are not transferred in any way, make them wait in a safe place.
- If you and your relatives and acquaintances are safe, try to help others; but it is natural to aim primarily the health and safety of yourself and your relatives and acquaintances.

Evaluation Of Situation

It is very important for individuals to make an evaluation about themselves. The aim of this is to evaluate situation. While evaluating the situation, needs, resources and risks should be defined.

If the assessment of a situation is not done carefully, it becomes complicated. For this reason, it should be proceeded step by step as a part of one method. It is also useful to plan this method beforehand. Making disaster plan before the occurence of any disaster and thinking probable disaster scenarios as making this plan are very useful during the evaluation of a situation.

While making this assessment, another important matter is to be calm. Panic hinders to assess events correctly and causes to skip some important details. Being in a hurry causes deceptive results. We should evaluate the situation without exaggerating or underestimating.

The evaluation of a situation for disaster victims is different from the technical assessment that public officers make. After an earthquake, individuals should try to make an assessment based on calmness and common sense in order to understand their own situation. In the meantime, a deep observation and a careful interpretation are very important.

We should follow these steps to assess after an earthquake and evacuation:

Assessment

Health: An assessment about health is the first thing that should be done after a disaster. The aim of this assessment is to define whether vital danger continues and there are any injuries or not. It will be very useful to have knowledge about first aid as making an assessment about health. And therefore every individual should get first aid training. We should bear in mind those below during an assessment:

Individual: An individual should check whether there is a death risk or not. If there is a danger, he/she should evacuate immediately. If there is not any death risk, he/she should check whether he/she is injured or not. Injuries might not be noticed because of the excitement after an event. And so an individual should pay attention to his/her body and should check the places of aches and pains. If there is any bleeding, we should dress injury. If we do not have any knowledge about first aid, we should ask for help to someone with first aid training.

Family/relatives: After checking ourselves, individuals should check the members of their families and relatives. In this way, we can understand if someone has a health problem or not.

Surrounding area: After checking our friends and relatives, it is time to check the people around us. We should check whether the individuals living alone and having any knowledge about first aid, are injured or not. At the same time, the individuals who have contagious or chronic diseases around should be assessed too. It should be looked whether these people have a vital risk or not. Primarily, general assessment gives an idea about the earthquake magnitude. If there are too many injuries, we should bear in mind that health officers can be very busy.

Structures:

Structures: The most observable effect of earthquakes is seen on structures. Structures can be collapsed or damaged during an earthquake; consequently in this phase of an assessment we should primarily look whether the structure is broken down or not. It is very easy to make this assessment; but the assessment of damage rate needs expertise. While assessing structures, we should give priority those below:

Individual: Primarily individuals should assess their own residences. While assessing their own houses, individuals have two advantages. The first of them is that they know the probable weaknesses of their houses. The structural risks of a house should be assessed as preparing Family Disaster Plan before an earthquake. The second of them is to be out of this house after an earthquake. It will be useful to see the condition of a house in order to assess it before an evacuation. But there is a disadvantageous matter. Individuals act too emotional and exaggerate or underestimate the condition while assessing their own houses.

Family/relatives: Individuals have an idea about the structural problems of their friends and relatives due to affinity and friendship. This information will make their assessment easier. While individuals assess the houses of their acquaintances, it is probable that they can act too emotional and exaggerate or underestimate the condition.

Surrounding area: While assessing the structures around them, individuals can be more objective. During this assessment, we decide according to outside observation. The main important side of assessing the structures around is to give an idea about disaster rate. If the number of damaged and collapsed structures are too much, it is understood that earthquake magnitude is too much.

Infrastructure

It is very important to have some knowledge about infrastructure. Any damage on infrastructure gives a sign of the effects of disaster that will continue until this system is repaired. The assessments about this matter give us a clue about disaster magnitude and when help will arrive in this area.

Electric-water-natural gas lines: Damages on electric installations cause the increase of fire risk. Breaks in natural gas lines also can cause a fire risk because of gas leakages too.The most important risk caused by water supply network, is about public health. Spreading of dirty water in water network is a serious problem. Installations should be turned off before evacuation. The apparatuses connected to these installations should be turned off too. It is easy to detect installation breaks in buildings; but the failures in main distribution lines are only detected by expert teams. These services might be cut from the main distribution stations after an earthquake; but before any cut off, water and natural gas pumped into network can leak from broken pipes.

Communication lines: Communication lines might be damaged too after an earthquake and phones might not work. The breakdown of this system is a significant problem. It becomes difficult to call for a help in an area that is cut off communication. Any cut or lock in communication lines is possible after an earthquake. In these cases, phones should not be certainly used. If you need help, you should ask for help directly by going to the nearest related emergency response organization.

Transportation lines: Transportation lines include such elements as road, bridge, dock, railway and railway station, airport and heliports. It is important to assess the amount of damage at these points in order to estimate when and how help will come at earliest. It plays a determinative role about the evacuation of an area. It is easy to assess transportation lines due to their generally observable features. If a bridge is collapsed or a dock sinks,

this will affect transportation in this area in a negative way. Highways have a high probability to be damaged. Destruction of roads, breaking down of bridges and tunnels are big problems as well as blocking of roads as a result of collapsing of structures.

Need and Resource Assessment

Need assessment should be done after the evaluation of situation. Need assessment is important in terms of individuals predicting their own needs. Individuals should assess by comparing present obstacles and probabilities while identifying needs. Individuals should take these below mentioned factors into consideration during a need assessment.

Weather conditions: Weather conditions should be taken into consideration during a disaster. The case that can be a main problem is not the weather condition during a disaster but after it. Seasonal circumstances have a determinative role nearly in every matter after a disaster. Such needs as sheltering, clothing, food and water especially change according to seasons.

Needs: After a disaster, some very basic needs emerge. The assessment of these needs is necessary for a healthy assessment of situation. It will be explained in details how to fulfill these needs later on.

Sheltering: If it is not possible to enter into houses after a disaster, an alternative sheltering place should be certainly appointed. A sheltering enables a protection from weather conditions. At the same time, it meets our safety and privacy needs.

Nourishment: Nourishment is a need that is directly proportional with spent energy. Undernourishment decreases the struggle power of an individual, at the same time it causes to be more vulnerable against diseases.

Urgent Needs After a Disaster

Disasters or emergencies cause serious failures in communal living. These failures can sometimes last for days and weeks and the fulfilling daily needs of people might become impossible. We need a plan to meet our needs during extraordinary conditions. As long as difficulties and problems are anticipated, preparations for survival will be successful in this extent.

During extraordinary conditions, basic needs can be stated as:

Food
Water
Sheltering
Clothing
Hygiene

These needs can be thought to be fulfilled by help organizations. But in a large scale disaster, we should not anticipate for help in a disaster area during the first 72 hours. For this reason, disaster victims should fulfill these above mentioned needs with their own means even very simple and practical exercises. While meeting these needs, we should balance between our own resources and acceptable standards.

Food

We should prepare beforehand in order to meet our food need right after a disaster. An amount of food should be in emergency sets. The qualities of the foods that will be used during emergencies, are these:

- Easily prepared
- Giving energy and mixing with blood swiftly
- High calorie
- Being rich in vitamin and carbonhydrate
- Preventing dehydration
- Nonperishable

Daily energy need of an adult is 2.100 calories. While supplying food during extraordinary conditions, we should remember this rate. Canned foods, dried nuts (especially dried fig, mulberry, dried apricot, raisin, hazelnut, peanut, etc.), ready soups, tarhana soup (sundried food made of curd, tomato and flour), macaroni and cracked wheat meet our food need swiftly and practically. At first, we should consume more perishable foods. Nonperishable ones should be consumed in the forthcoming days. Daily nutrition should

include adequate water and calorie and it should be balanced in terms of vitamin and minerals within the bounds of possibility. If there is not adequate water and food, we should take a rest by keeping away from unnecessary activities.

The conditions of individuals with special needs should be taken into consideration too. The food need of babies, elders and patients can be very different. Elders taking a rest, need less food. But nursing women, children and patients need more food.

Cooking and stoves: Some foods should be cooked before being consumed. It is necessary for both consumption of food and preventing health problems. Sometimes hot food consumption can be all right not only to meet necessary calorie but also to fulfill our physical need and to raise our morale. It can be difficult to cook during extraordinary conditions. A stove and a source of fire is needed in this case. A portable stove in emergency kits is helpful to make a fire and to make use of it safely. But this stove needs adequate and appropriate fuel; otherwise it will be useless. Some materials can be used in order to make a fire in cases of not having a stove. While cooking, we should completely boil water. If fuel is limited, we should prefer easily cooked foods or foods consumed without being cooked; because boiling water is a long process. Another matter that we should be careful about is the date of expiry. We should change these foods before the date of expiry.

Water

Water has a big importance for survival, health and cleaning. Adequate water might not be found in order to meet our basic needs during extraordinary conditions and disasters. Water is as necessary for drinking as personal and environmental cleaning. Many health problems are seen to be resulted from inadequate and bad water usage because of bad hygiene and inadequate water consumption. Supplying water after a disaster is an important problem. Earthquakes might have destructive effects on water

supply network. Pumbs of water sources, water transfer lines, treatment stations, main distribution networks and installations in houses might be damaged. This case causes trouble in rural areas too but in cities, the damage of water supply network causes more serious outcomes. While in rural areas it is easier to reach alternative water resources, alternative water resources might not be in urban areas.

In this case, some temporary precautions should be taken in order to supply water and damaged places should be repaired. It is difficult to be reached help for disaster victims during the first 72 hours after large scale disasters, so it is useful to talk about some practical precautions in the earlier stages after a disaster.

Water shortage after a disaster should be certainly thought and if it is possible, as much as water the members of a family need, should be included in formerly prepared emergency set. By the time water shortage appears, initially we should have adequate water. After that water quality should be made suitable.

Water resourcesı: The choice of a water resource is a delicate subject. The resource should be carefully chosen and used. Urban areas have much less water resources than rural areas. The reason of this is that city dwellers are dependent on a water supply network supplying water to their houses from water resources. Rural areas benefit from water supply network too. But reaching alternative resources might be easier in case of being damaged of water supply networks.

Water can be supplied from different resources. While using these resources, we should be careful about some basic things. Primarily, a water resource should be as clean as possible. Using water from a polluted resource is dangerous for human health. At the same time, resource should be kept clean and should not be polluted and also it should be in a safe area and enough distance from settlements. It should not be in solitude and far areas causing danger for the ones who cannot protect themselves.

Water quality: If matter is drinking water, water quality gains importance. People can consume water seeming clean; but some microbiological organisms and chemicals might be in even this water. Identifying them is a special task. So, water that is tested by experts and identified as being inappropriate for usage, should be certainly treated. Water consumption from unsafe resources can include pathogen elements such as virus, bacteria and maggot. This case especially occurs when excrement mixs into water.

Primary thing that should be done in order to preserve water quality is to not to pollute water resources. So, waste materials, toilets and other waste sites should be in places that do not affect water resources.

Water treatment: Water treatment is a work that needs technical knowledge and speciality,

but it is possible to make drinkable water with some very simple methods. Until help organizations provide safe water, some suitable techniques should be certainly applied to water from unsafe resources.

These techniques can be used in the short term and can be applied until developing long term solutions. It puts physical and microbiological pollution away. If chemicals have mixed, we should not use this water until it is treated by experts.

Stocking and Keeping: As long as it is kept under healthy conditions, 50% of bacteria in water die. At the same time, suspended matters and some pathogen elements settle at the bottom of container. The container that is used for this should have a cover and we should do its periodical cleaning.

The upper parts of a container are always cleaner; so we should use water in this place. If water is waited as long as 48 hours, some organisms causing diseases will be treated.

The system of three containers is an ideal for stocking and keeping. In this system, water that is waited in one container in the first day, is transferred into another container in the second day. In the third day, we can consume it. Thus, water waits at least 48 hours before usage.

Disinfection: Drinking water should not include hazardous organisms. Water treatment methods might eliminate some microorganisms in water; but eliminating all of them is never ensured. Water should be certainly disinfected. Disinfection is applied to water that has other water treatment methods. Otherwise some solid and organic matters in water limit the effect of this method. Disaster victims can use disinfection methods as follows:

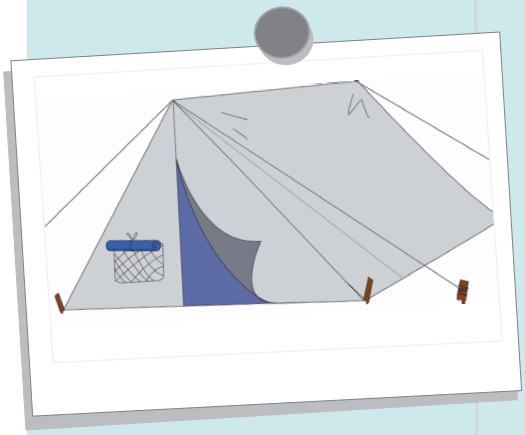
Boiling: Boiling is a very affective disinfection method. It can eliminate many pathogens. Boling five minutes can be adequate, but it is suggested to be boiled until twenty minutes. High fuel consumption is a disadvantage of this method.

Chlorination: Chlorine is one of the chemicals that has been frequently used for disinfection. Its usage is easy and effective. It has low cost. It can kill many virus and bacteria except indestructible ones.

Disaster victims can use chlorine in two ways. They can buy chlorine tablets before a disaster. We should read how it is used and should not use them out of producer advices. Bleachers that we use in our houses, have chlorine. Water disinfection is enabled by mixing bleacher with water and waiting thirty minutes. The amount of bleacher is important in this process. Determinative thing is chlorine within bleacher. We should not use nonchlorine bleachers for water treatment. Mixing rates of bleachers with various amounts of chlorines are stated in below table (Figure 14.1).

For 1% chlorine rate	10 drops in 1 liter water
For 4-6% chlorine rate	2 drops in 1 liter water
For 7-10% chlorine rate	1 drop in 1 liter water

Figure 14.1: Chlorine rate.



Sheltering Need

Earthquakes have destructive effects on structures. Deaths and injuries occur during earthquakes that cause many structures to collapse. People leave homeless. Even structures do not collapse, they have serious damages that make impossible to live in them. Even damage free ones cannot be used right after an earthquake because of aftershock risk. At the same time, people refrain from entering into buildings because of psychological reasons and they want to stay outside areas.

These conditions bring out the sheltering need during extraordinary conditions. Sheltering help may not be provided during the first phases of a disaster and it can be necessary for disaster victims to build shelters with their own means.

People build small living areas and jerry built housings near to dwellings, streets, pavements according to season in order to enable security, rest, waiting, lodging for their injured acquaintances or for their valuable belongings. First of all, the areas coming to mind are parks and vehicles in summers and tents and prefabricated structures in mid seasons and winters. If their buildings and acquaintances do not get any harm and they do not have any place to stay in, people can spend their days with the same methods near buildings too.

Housing: People are in search of a place that is near to their dwellings right after a disaster. Small housings and shanties can be built with their own means for this need.

Tent: Tent is one of the widely used materials for temporary sheltering. There are very wide tents that are named also as field tent and there are also very small tents even to shelter two people. Tents sheltering a great number of people, are generally supplied by help organizations. Individuals can use smaller ones.

At the same time, tents are difficult places to live in for the ones who are not used to. Tent life is not comfortable. People who are used to live in apartment buildings and houses, might have difficulty.

Tents have very different types. If a tent is bought before a disaster, we should keep some features in mind. Tents consist of particular materials and they can change according to their brands and models. An individual who has experiences about pitching a tent, can build one combining some materials.

Pitching a tent: Pitching a tent is a simple task but it is necessary to be careful. It can seem difficult and complicated for the ones who have never done before; even the ones who know, have difficulty in pitching tents produced in different styles. So we should consult about this to the place where we have bought it. Tents should have setup manual and it should be completely read. At the same time, even though setup can change according to design, the logic of pitching tent is the same.

Choosing tent place is an important matter. We should not forget that wherever we pitch our tent, we will live there during this time. The place of a tent should be assessed in terms of two ways. The first one of them is safety and the second one is comfort.

The place of a tent should be sheltered against the secondary risks that can occur after an earthquake. Such elements as high structures, electric lines, natural gas panels creating danger should not be around. At the same time, places near creeks in cities might not be healthy too. If a tent is pitched on a place that is higher than its around, this makes our tent to be protected against rain and flood; drainage becomes easier. We should not prefer a place that is exposed to effect of wind. High winds cause tents falling down and poles being broken. Tents should not be pitched near debris after disasters. Staying always near debris can affect the psychology of people staying in tents.

Primarily, we should accept that a tent is an uncomfortable and restless place. But we should try to build it in a place that enables all the comforts within the bounds of possibility. If we find a place that supplies our safety, comfort should be looked for as a second one. Tent should be pitched on a level area instead of a slope. At the same time, it should be a place that we can have a soil ground to pitch stakes or we can have materials to fasten our tent with stretching ropes.

Before pitching a tent, we should remove roughness and stones. If we do not do these, it will be difficult to sit and lie in the tent. After flatting ground, canopy or ground cloth according to tent types (if it is double canopy tent, only inner canopy) is laid on the place where our tent is pitched. Tent poles are pitched according to setup manual. While pitching a tent, we should be careful about the exit of our tent. It should not look wind direction.

After building the framework of a tent, ground cloth or canopy (if tent is double layer, only inner canopy) should be connected to each other as it is stated in setup manual. In double layer canopy, outer canopy is covered over the framework of our tent as it is stated in setup manual. After our tent is fastened to ground with stakes in a stretched way, canopy is completely set up. Stakes should be pitched angularly not upright.

After fastening a tent in a stretched way to ground, canopy should be stretched as stated in setup manual. It is necessary to do this to enable heat insulation, air conditioning and to increase resistance against wind.

Sheltering in cold weathers: Sheltering is very difficult in places prevailing cold, windy and rainy weathers after a disaster. While shelters are built lighter in warm weathers, they should be built more durable during adverse weather conditions. People want to be in a house during cold weathers. Elders with special needs, children and patients need to be in warm places too.

Adverse weather conditions force shelters. We should prefer durable funneled shelters against the effects of wind and snow and it is possible to use heaters in them.

Heat loss should be prevented during adverse weather conditions. So we should protect our body temperature with clothes such as a blanket, a sleeping bag, a cloth, a pair of socks and a beret. If possible, we should consume high-calorie foods.

The wider sheltering is, the much more heat insulation becomes. Windows and doors should be designed in order to enable isolation. Also a sheltering should be made in a way that it will be possible to light a small stove. We should fasten this stove to its place and place it on a safe place.

Mass-temporary sheltering : The individuals that are evacuated after a disaster, meet in an open area. They can be placed in public sport halls, stadiums, stores, storehouses, mosques and schools according to disaster magnitude and season conditions with competent authority decision. Experts should assess these places before using them as a temporary settlement. So individuals should use these structures as a temporary settlement as long as being guided by competent authority. Nobody can try to shelter in such kind of structures by themselves.

Mass sheltering buildings do not have adequate equipments and infrastructure because of not having housing purpose. Hence, a healthy housing area should be needed. Materials such as a mat should be used on the ground of these buildings with the aim of isolation for sleeping, resting and waiting. If we cannot supply adequate isolation, health problems can increase. Area for any person can be narrow in these areas. Another important matter is privacy. It is difficult to enable the privacy of an individual and a family in such places.

These kind of sheltering centers are not practical and also have serious health and hygiene problems. So we should not use these places as long as it is not necessary. The individuals who are obliged to stay in such a temporary sheltering places, should be careful about their own personal hygiene and certainly follow the advices and directions of competent authority.

Temporary premises and camps: Temporary premises or camps can be built with the sheltering purpose of disaster victims after major disasters. The management of these places is considerably complicated and these places provide services for many families. Even these places supply sheltering as long as not being managed in a planned way and well, they cause problems more than benefits. So these are the last places to be applied as a temporary sheltering. Nevertheless it has been observed that these kind of temporary premises are frequently built and active for a long time during major disasters and emergencies

Temporary premises and camps can be built in the places planned beforehand by official and semiofficial institutions, military units, international organizations or nongovernmental organizations. Official organizations coordinate the task of management and setting up. At the same time, organizations supplying this help can maintain their administrative and technical support in camps that they establish.

Temporary premises and camps have two aims. The first one of them is to make easier to be benefited from basic services aimed at meeting the basic needs of disaster victims. We can exemplify these basic services as medical services, dining halls, markets, schools, playgrounds, houses of workship, toilets, water resources, fountains and stores. The second aim is to reach help to more people with less cost by enabling these services to a large number of people in a mass area. One of the most important benefits of temporary premises and camps is to provide the security of disaster victims. At the same time, camps provide conveniences in terms of contacting directly authorized officers with disaster victims. These places also make community participation possible in restructuring processes.

Disaster victims should follow camp rules as long as they dwell in temporary premises and camps. Because any risk affects almost all the individuals. We should act according to rules that are appointed by camp management in such cases as throwing waste out and using toilets properly and fire safety. We can analyze temporary premises and camps in two groups:

Tent cities: Tent cities are set up by enabling infrastructure services and placing a large number of tents in a camp systematically. Tent cities are set up with the aim of help in disaster areas by a corporation or an organization. So it is planned. Moreover some rules can be established in common use areas because of the difficulty of its management and a large number of individuals live there. Disaster victims are supposed to obey these rules. Generally,

tent cities are established not right after a disaster but a little later.

Prefabricated premises: Prefabricated structures are used in these premises. A difference from tent cities is that such needs as a bathroom, toilet, electric and water should be included in life spaces. Also, these are more healthy and safe structures with their isolation, durability and ground qualities. At the same time, prefabricated structures have some problems. Price per unit is high. It takes time to supply and its setup needs expertise. They are not transferred as easily as a tent. The difficulty of cooling can be especially during warm weathers.

Clothing

There might not be a place for clothes in a first aid kit because of their taking a big place. But we should still put such materials as underclothing, socks, raincoat in our kit; because these things take a small place but they are useful. If an extra dress and a pair of shoes are put, they should be durable and seasonal. Cloths in a kit can be exemplified like this:

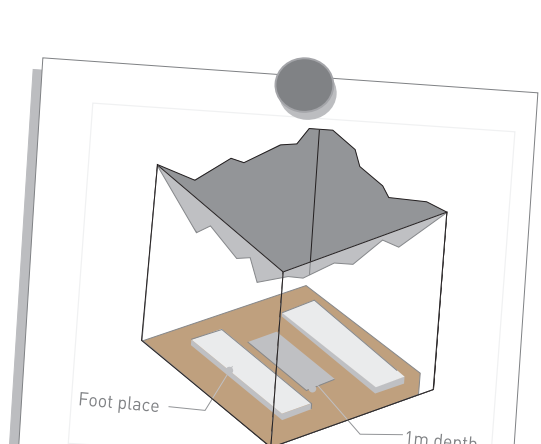
- o Seasonal cloths
- o Clean underwear
- o Socks
- o Shoes
- o Raincoat

Hygiene

Hygiene applications have a vital importance during the conditions after a disaster. Epidemic risk is much more in unhygienic environments. Common belief is that dead people cause epidemic. However the waste and contamination of all the creatures cause an actual suitable environment for the increasing of germs. So we should be careful about enabling hygiene during extraordinary conditions however bad the conditions are.

Toilet: Toilet need is a delicate matter. Absolutely, meeting this need is going to be more difficult during

extraordinary conditions. But we should take some basic needs into consideration while building temporary toilets during these conditions.



Toilets should meet the needs of every individual in a community and individuals with special needs such as children, disabled people, elders and pregnant women should be thought. The place of toilets should meet the privacy need of an individual. We should not prefer an isolated place, because these places can cause safety problems. Water should be in toilets. Every kind of toilet should meet some criteria during disaster conditions. These criteria are elimination, isolation and wipe out. A simple toilet should eliminate excrement from life spaces and should enable to be isolated it in its present place and then to decay. If toilets are built especially for a mass and a family, it should be kept cleaner. At the same time, disaster victims should try to keep clean public toilets built at the initial moments after a disaster. Individuals should apply all the cleaning rules.

Very simple and early steps in order to get rid of human excrement is more productive than high technological but late steps. After help comes, some services such as a public toilet start. Until these services are enabled, families can build simple toilets.

People need urgent solutions about toilet need right after a disaster and these places should be near to dwellings that people do not enter into. Disaster victims have already used some suitable places for meeting their toilet needs. But this matter has an important place in terms of health and it should be planned carefully. It is very difficult to correct an early mistake afterwards during disaster conditions.

We should take these following points into consideration about toilets:

- Flies and smell: Excrement causes to become bug-infested and stink. Especially it causes flies to increase. So cleaning of them should be done well.
- Drainage and durability: Toilets should be durable against flood, overflow and weather conditions. They should not collapse and overflow.
- The expected life of them: The full ones should not be used and these sites should be certainly marked.
- Cleaning and privacy: We should keep them clean. Also it should enable privacy for individuals.

Waste: Dumping areas should be at least 100 m away from human settlements and they should not be in sites that might mix into water. A hole around 1,5 m width and 2 m depth should be dug based on 100 individuals and a week for dumping sites right after a disaster. Every hole in 1 m length can include a week' waste of 200 disaster victims. Another dimension for dumping sites is a 3 m hole for 50 individuals per month. Dumping holes should be covered 20-30 cm soil every day. This hole should be filled with soil to 40 cm being full. Soil and lime should frequently be covered over waste like toilets. If plastic, organic and paper wastes are decomposed, waste piling can be decreased. We can burn paper materials. Organics can be turned into fertilizer. We should bury animal carcasses around and lime as soon as possible.

Hand wash: Hands should be frequently washed after and before emergency actions during the first aid and rescue operations of disaster victims after disasters. It is necessary to wash hands after an operation with gloves too. We can use normal soaps, detergent or disinfectant soaps for hand wash. Generally, liquid soaps are suggested. If we prefer solid soaps, the usage of personal soaps, a small bar of soaps and perforated soap dishes are suggested.

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