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Foreword

The National Disaster Risk Management Framework for Bhutan was adopted by the Lhengye Zhungtshog in 2006. The Framework outlines activities to be implemented under nine different components to further disaster risk reduction in Bhutan. The strategy outlined in the framework entails multi-sectoral participation and coordination, an empowered and decentralized disaster management system and institutions and above all, the importance of communities to lead the disaster risk reduction process.

To ensure meaningful participation from community members and empower them to take action during times of emergencies, we need to first raise their awareness – on what our hazards, risks and vulnerabilities are and what we can do to prevent and mitigate them. More importantly, we need to inform people on the “dos” and “don’ts” during various disaster events and small but significant actions they can take to reduce risk to their lives.

This “Emergency Safety and First Aid Handbook” is one of the many efforts made by the Department of Disaster Management, Ministry of Home and Cultural Affairs to raise public awareness on disaster risk reduction. The handbook is easy to read with simple illustrations and provides basic information on various hazards, actions that can be taken by individuals and communities before, during and after emergency and essential first aid information.

This handbook is a culmination of contributions made by various stakeholders and funded through the Earthquake Risk Reduction and Recovery Preparedness (ERR&RP) Project and LDCF-GEF project – “Reducing climate change induced risks in the Punakha-Wangdue and Chamkhar Valleys”. The Ministry of Home and Cultural Affairs is grateful for all the kind support and cooperation we have received so far.

The Ministry of Home and Cultural Affairs hopes to make available copies of this handbook to all schools, Gewogs, Dzongkhags, various agencies and the general public. We are optimistic that people will find the handbook useful and informative.

Reducing disaster risks and extending support to those affected during emergencies is the responsibility of every citizen. Let us all work towards a “Safer Bhutan”.

Tashi Delek!

(Minjur Dorji)
I. Introduction

The Emergency Safety and First Aid Handbook seeks to provide local administrations as well as the general public with a basic understanding of disasters that affect the country and the actions that communities can take in order to reduce risks to themselves and their families. The handbook defines the different hazards that Bhutan is prone to and provides useful information on do’s and don’ts during a disaster and also outlines activities that can be undertaken to prevent/mitigate and respond to an emergency. It can also be used as a simple training material for raising awareness and building capacities in communities.

II. General Disaster Preparedness

In any disaster preparedness planning, communities should:

- Determine possible risks and hazards that could affect their community through observation based on past history of disaster in the area and by observing their environment.

- Assess vulnerabilities in connection to identified hazard threats. E.g. Is your house near a flood prone area? Is it near a forest? Near an area susceptible to landslide? etc.

- Plan for and take necessary actions to mitigate or prevent those threats.
III. Family Disaster Preparedness

Families can also take protective steps to plan for emergencies and be prepared.

a) Family Disaster Plan

A family disaster plan is necessary for you and your family to know what to do during a disaster to prevent or minimize injuries. Making a family disaster plan involves the following:

- Look for the fastest and best escape routes from your home.
- Keep yourself informed about safe shelters and safe areas.
- Make special accommodation and plans for family members with disabilities.
- Discuss your family plan with all members and explain to your children.
- Show each family member how to turn off water, gas and electricity and when to do it.
- Discuss who will assist the small children, elderly and person with disabilities during the disaster.
- Practice your plan.
b) Family Disaster Supply Kit

In a disaster situation you could remain without any outside help for the first few days and without access to electricity, water or communication services. It is essential that you plan for the event by stocking essential items to last a few days.

- Store water in plastic containers, depending on the size and need of the family and change it every few months.
- Keep some match boxes, torch and batteries, thin blankets, a whistle and any other things you may need in an emergency.
- Keep emergency non-perishable food supplies ready for use. For e.g. Zaw (popped rice), Kapchi (wheat flour), etc.
- Keep first aid kits containing some basic medicines and first aid supplies.
- Keep all these supplies in air tight plastics or in water proof bags.
- Discuss and identify an appropriate place to keep the bag with your family.
c) Family Emergency Communication Plan

During a disaster you and your family could get separated so it is important to develop an emergency communication plan:

- During a disaster, you and your family could get separated so it is important everyone knows where you all will meet afterwards. It could be a different place for different hazard. E.g. For earthquake – an open ground, for floods – a high ground.

- It is also important to know how you will contact each other. Designate someone living in some other place as your contact in an emergency.

- Make sure that everyone knows the number of the emergency contact and also each others. Leave those numbers at your children’s school and at your work place.

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<th>EMERGENCY SERVICES</th>
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IV. Hazards and their preparedness

1. Earthquakes

Earthquakes are a sudden slipping or movement of a portion of the earth's crust, accompanied or followed by a series of vibrations. Earthquakes strike suddenly, violently, without warning. Earthquakes occurring in a populated area may cause many deaths, injuries and extensive damage to property. Bhutan is located in one of the most seismically active zones in the world. Therefore, every citizen should be aware of risks and be better prepared to respond in case of a major earthquake. We should ask ourselves the following questions:

• Why do earthquakes happen?
• How can we protect ourselves?

• What must we do to minimize the damage?
Earthquakes cannot be predicted but we can be proactive. Earthquake protection is about a whole series of measures, small and big, that you can and must work on today to ensure that tomorrow is safe. The truth is “Earthquake do not kill, unsafe buildings do!” Loss of human lives and injuries are caused due to collapse of buildings. Poor design, poor construction, and poor maintenance - these are the killers. Earthquake often trigger fire incidents, landslides and in the case of Bhutan can also lead to Glacial Lake Outburst Floods (GLOF).
i. Before an Earthquake

Before an earthquake you can take some non structural mitigation measures to reduce risks, like those given below:

- Fasten shelves securely to walls.
- Place large or heavy objects on lower shelves.
- Store breakable items in lower, closed cabinets with latches.
- Hang heavy items such as pictures and mirrors away from beds, couches, and above places where people sit.
- Securely fix overhead light fixtures.

- Secure a water heater by strapping it to the wall studs and bolting it.
- Repair any deep cracks in ceilings or foundations. Get expert advice if there are signs of structural defects.
- Repair defective electrical wiring and leaky gas connections. These are potential fire risks.
- Formulate your own family’s preparedness plan, be prepared with first aid kits and take the efforts to learn basic emergency first aid skills.
ii. During an Earthquake

- When you feel an earthquake get under a table or bed and hold on to the leg tightly. This action is usually termed as “Duck, Cover and Hold”. Face away from windows as window panes may shatter due to the shock.
- As soon as the shaking stops, get out of the building quickly, while covering your head with a bag/ pillow at all times to keep your head protected.
- Go to an open space where there are no structures/ walls etc.
- Do not panic- do not shout, run or push.

iii. After an Earthquake:

- If driving, stop as quickly as safety permits. Stay in the vehicle. Avoid stopping near or under trees, buildings, bridges, overpasses or over head electrical cables.
- Make sure all your family members are safe.
- Help your neighbors if you are able.
- Do not go back to the building after an earthquake as the after shocks could make the building collapse.
• If away from home, find a safe route to go back home. Do not go through routes where there are bridges or lots of houses as the structures could fall due to aftershocks.

iv. If you are trapped under debris/rubble

• Do not panic protect your head and face from falling objects.
• Crawl under a sturdy table, desk or bed as that will provide air space and protect against falling objects.
• Use a torch to attract attention
• Do not use matches and candle if there is a danger of gas leak.

• If you are pinned down by debris, constantly move your fingers and toes to ensure blood circulation. Keep calm and be alert to rescuer’s calls. Do not shout unnecessarily as it would only lead to loss of energy. Call out if you are sure someone is around.

• Check your buildings for new cracks or structural defects.

• Practice your emergency plan regularly with your family.
2. Glacial Lake Outburst Flood/ Floods and Flash Floods/ Natural Dam formation and burst

Flood – Flood is defined as an overflow or inundation that comes from a river or other body of water and causes or threatens damage.

Glacial lake outburst flood - A flash flood event that is caused by sudden breach of the lake barrier.

Flash flood - Sudden, intense flooding, normally strongly localized and associated with extreme shower or thunderstorm activity with high rates of precipitation over a short period of time.

Artificial dam formation and dam burst - A flood phenomenon where the river gets dammed by some debris or landslide and eventually leads to outburst of the dam. Bhutan is prone to flooding and flash floods during the monsoon season.
i. Before a Flood

Analyze the history of flooding in your region and determine the impact of such floods to your property.

Measures to help protect your home and family before a flood:
• Closely monitor weather forecasts.
• If a flood warning is issued by concerned officials, be on the alert and listen to a radio (television if possible) for updated emergency information.

• Do not go near the river/river banks to witness the event. Your curiosity may cost you your life.
• Be ready to react immediately. Floods/flash floods/GLOF can happen quickly and without warning.
• If your residence is in a flood-prone area:
  - Move your valuables to safer areas.

- Have an emergency evacuation plan.
- Get your disaster supplies ready.
- Be prepared to move to the designated evacuation/safe areas marked by concerned authorities.

ii. During a Flood Event

When driving during a flood event:

• Most flood-related deaths occur when people are driving, avoid all non essential travel.

• If you must drive, avoid areas that are subject to flooding.

• Never attempt to drive over a flooded road. The depth of water is not always obvious and the roadbed may have been eroded resulting in pot holes which could be hazardous.
• If your car stalls, abandon it immediately and climb to higher ground.

• Be very cautious at night when it is harder to recognize flood dangers.

When outside during a flood event:
• Avoid walking through flooded areas – particularly during a flash flood. As little as 6 inches of moving water can knock you off your feet.

• Closely watch out for downed power lines and electrical wires. Report downed lines to the authority concerned immediately.

• Watch out for snakes and other animals.

• Abstain from movement at night as it is harder to recognize flood dangers.

• Never let children play outside during a flood event.
When inside your home during a flood event:

- If the waters start to rise inside your house before you have evacuated, retreat to the second floor and the attic.
- Look for fire hazards. Fire is the most frequent hazard following floods.
- Keep power off until an electrician has inspected your system for safety.

iii. After a Flood or Flash Flood

- Be careful walking around. After a flood, steps and floors are often slippery with mud and covered with debris, including nails and broken glass.
- If required, seek necessary medical care at the nearest hospital or clinic. Contaminated flood waters can lead to very serious infections.
- Help neighbors requiring assistance.
• Avoid disaster areas. Your presence might hamper rescue and emergency operations, putting you at further risk.

• Do not go near the river/river banks to collect fish brought down by the flood. Such fishes can be poisonous and it is not worth risking your life.

• Continue listening to the Radio or television for further instructions and warnings from relevant authorities.

• Stay out of any building if floodwaters remain around the building. Floodwaters often undermine foundations, causing sinking. Floors can crack or break, and buildings can collapse.

• Ensure buildings are safe before reoccupying them. Examine buildings—walls, floors, doors, staircases, windows, foundations for damages.

• When entering buildings, use extreme caution. Building damage may have occurred where you least expect it. Watch carefully every step you take.

• Wear sturdy shoes. The most common injury following a disaster is cut feet.
• Use battery-powered lanterns or flashlights when examining buildings. Battery powered lighting is the safest and easiest, preventing fire hazard for the user, occupants, and building.

• Look for electrical system damage. If you see broken or frayed wires, or smell burning insulation, turn off the electricity at the main fuse box. Call an electrician for advice and dry electrical equipment before using.

• Watch out for animals, especially poisonous snakes that may have come into buildings with the flood waters. Use a stick to poke through debris. Flood waters flush snakes and many animals out of their homes.

• Take pictures of the damage, both of the building and its contents, for insurance claims.

• Throw away food that has come in contact with floodwaters. Food contaminated by floodwaters can cause severe infections.

• If water is of questionable purity, boil and distill drinking water before using. Ill health effects often occur when people drink water contaminated with bacteria and other germs.
3. Thunderstorm and Lightning

Thunderstorm – A cloud that contains lightning and thunder.

Severe Thunderstorm – A thunderstorm that produces hail at least three-quarters of an inch in diameter, has winds of 58 miles per hour or higher, or produces a tornado.

Lightning – The flash of light produced by a discharge of atmospheric electricity from one cloud to another or from a cloud to the earth.

Thunder – The sound that follows a flash of lightning and is caused by sudden expansion of the air in the path of the electrical discharge.

Hailstones -- balls of ice caused by water droplets caught in updrafts, freezing the water. Hailstones can cause damage to vehicles and windows. However, crops are usually the most affected.

i. Before a Thunderstorm

- Undertake the following measures to protect your property:
  - Keep trees and shrubs trimmed – particularly tree limbs close to your house.
  - Remove any debris or loose items in your yard. Branches and firewood may become missiles in strong winds.
  - Install lightning rods.
ii. During a Thunderstorm

- Unplug appliances. Avoid using the telephone or any electrical appliances. If lightning strikes, telephone lines and metal pipes can conduct electricity. Leaving electric lights on, however, does not increase the chances of your home being struck by lightning.

- Avoid taking a bath or shower or keep water running for any other purpose. Metal pipes and plumbing can conduct electricity if struck by lightning. Turn off electrical appliances like TV, computer as lightning can cause power surges.
- Bring pets inside.

- Be prepared to seek shelter if a severe thunderstorm approaches. A sturdy building is the safest place to be during a severe thunderstorm. Avoid unprotected areas or isolated structures in open area that could be a target for lightning.

If Outdoors During a Severe Thunderstorm

- Avoid natural lightning rods such as golf clubs, fishing poles, tractors, bicycles, umbrellas and camping equipment. Lightning is attracted to metal poles or rods.

- If there are no reinforced buildings in sight, take shelter in a car.
• Stay away from rivers, lakes, and other bodies of water. Water is an excellent conductor of electricity. When lightning strikes nearby, the electrical charge can travel through the water.

• As a last resort and if no structure is available, go to a low-lying, open place away from trees, poles, and metal objects. Have as little contact with the ground as possible. Squat low to the ground. Place your hands on your knees with your head between them. Make yourself the smallest target possible. Do not lie flat on the ground; this will make you a larger target.

• If you are in the woods, find an area protected by a low clump of trees. Never stand underneath a single large tree in the open. Be aware of the potential for flooding in low-lying areas.

While Driving During a Thunderstorm and Heavy Rain

• Pull safely onto the side of the road and stop. Make sure you are away from any trees or other tall objects that could fall on the vehicle. Stay in the car and turn on the emergency flashers until the heavy rains subside. This will alert other drivers with limited visibility that you have stopped. Vehicles provide better protection from lightning than being out in the open. Keep car windows closed.
• Avoid contact with metal or conducting surfaces. Lightning that strikes nearby can travel through wet ground to your car. The steel frame of a hard-topped vehicle provides increased protection if you are not touching metal. Rubber tires provide no protection from lightning. Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside.

• Drive cautiously and avoid flooded roadways. Most flood fatalities are caused by people attempting to drive through water. The depth of water is not always obvious. The roadbed may be washed out under the water, and you could be stranded or trapped. Rapidly rising water may stall the engine, engulf the vehicle and its occupants, and sweep them away. Two feet of water will carry away most automobiles.

iii. After a Thunderstorm

• Check for any damages/ injuries to your family and property.
• Continue listening to the radio or television for updated information and instructions. Access may be limited to some parts of the community, or roads may be blocked.

• Help a neighbor requiring assistance. Elderly people and people with disabilities may require additional assistance. People who care for them or who have large families may need additional assistance caring for several people in emergency situations.
• Stay away from storm-damaged areas.
• Watch out for fallen power lines and report them immediately.

If Someone Is Struck by Lightning

• Get help from the nearest BHU, Hospital, Emergency Medical Services (EMS). Medical attention is needed as quickly as possible.
• Give first aid. If person is unconscious or not breathing normally, a trained person should give CPR. If the person is conscious and breathing normally, look for other possible injuries.

• Drive only if necessary. Debris and washed-out roads may make driving dangerous.

• Check for burns in two places. Persons who have received an electrical shock may be burned in two places—where they were struck and where the electricity left their body. Being struck by lightning can also cause nervous system damage, broken bones, and loss of hearing or eyesight.
• People struck by lightning carry no electrical charge that can shock other people, and can be handled safely.
4. Windstorm

Windstorm is a storm with high winds or violent gusts but little or no rain. Winds with speeds up to 241 kms per hour have been recorded during windstorms.

i. Do’s
• If you know windstorms are coming or live in an area with frequent windstorms, secure loose items especially CGI sheets and other roofing material.
• Notice and find ways to secure telephone or electric poles that may damage your house or building during a windstorm.
• Use caution after the storm in securing everything.

ii. Don’ts
• Do not go out in the wind, stay indoors.
• Do not touch downed electrical or telephone pole wires.
• Do not approach objects outside that may pose danger, especially sagging trees with broken limbs

5. Landslide

Landslides occur when masses of rock, earth, or debris move down a slope. Landslides may be very small or very large, and can move at very high speed. Landslides are typically associated with periods of heavy rainfall or rapid snowmelt and tend to worsen the effects of flooding that often accompanies these events. In areas burnt by forest fires, a lesser amount of precipitation may initiate landslides.
Mudflows are rivers of rock, earth, and/or other debris saturated with water. They develop when water rapidly accumulates in the ground, such as during heavy rainfall or rapid snowmelt, changing the earth into a flowing river of mud or “slurry.”

i. Before a landslide
- Find out if landslides have happened in the area in the past.
- Look out for landslide warning signs like doors or windows stick or jam for the first time; new cracks appear in plaster, tile, brick or foundations; fences, retaining walls, utility poles or trees tilt or move.
- Make an evacuation plan in case of a landslide.
- Consider relocation in case your house is located in an area particularly vulnerable to landslides.

ii. During a landslide
- Listen for any unusual sounds that might indicate moving debris.
- If inside a building, stay inside and remain alert.
- If possible move to a higher story to stay out of the path of a landslide or debris flow.
- If you are outdoors try to get out of the path of the landslide or mudflow by running to the nearest high ground or away from the path.
- If you are near a stream or channel, be alert for sudden increases or decreases in water flow and change from clear to muddy water. Such a change may indicate landslide activity upstream, so be prepared to move quickly without delay.
- If rocks and other debris are approaching, run for the nearest shelter such as a group of trees or a building.

iii. After a landslide
- Stay away from the landslide area as there may be danger of additional slides.
- Watch for flooding which may occur after a landslide.
6. Structural Fire

i. Before a structural fire:

- Check electrical wiring in your house. Fix damaged, exposed or loose plugs.
- If possible, install smoke detectors, test them each month and replace the batteries at least once a year.
- Have one or more working fire extinguishers in your home, building or school and ensure you know how to use them.
- Install extinguishers about 1 meter high on the wall, near an exit or in easily accessible places and away from heat sources.
- Develop an escape plan checking out at least two escape routes and make sure everyone knows what to do.
- Conduct a fire drill, especially in schools and practice at least twice a year with all the students.
- Practice “crawl-low escape”, as if you were crawling under a layer of smoke.
- Practice “stop, drop to the ground, and roll” exercises in case clothes catch on fire.
- Consider escape ladders on the second or third floor. Learn how to use them, and store them near the window. Escape ladders permit quick exits in smoke-filled, toxic environments.
- Identify a safe area outside to gather and to headcount for everyone after escaping from a fire.
- If possible, try to install fire sprinklers that can contain or even put off a fire.
ii. During a house fire

- If a fire starts or you hear the smoke alarm for fire alert, go outside right away. Yell to let people know the emergency is real so that they get out too.

- Never try to hide from fire. Leave all your things where they are and save yourself.

- Practice feeling all doors before opening them. If the door is hot, get out another way.

- Close doors behind but from outside as you escape to delay spread of fire.

- If your clothes catch fire - “STOP, DROP and ROLL” - Stop what you are doing, drop to the ground, cover your face and roll back and forth until the flames go out. Do not run as it will make the fire burn faster.

- You should not call emergency services from inside the building on fire. Get out first and call from neighbor’s house.

- If you have fire extinguishers at hand, fight the fire only if you can but don’t take undue risk.
iii. After a house fire:

- Stay out of the building once you are out.
- Call the fire services – # 110

iv. Operating a Fire Extinguisher

Fire extinguishers are easy to use and anybody can do it by following simple steps.
- Hold fire extinguisher in upright position and pull out the safety pin.

- Squeeze the lever or press the plunger down hard.
- Aim the extinguisher nozzle at the base of the fire and maintain a safe distance of 1 to 1.5 meters away from the fire.
- Use a sweeping motion to allow discharge to be directed over the entire fire area.

Forest fires are usually caused due to:
- Unattended burning of agricultural debris escaping from the field
- Cattle grazing (burning for new grass)
- Uncontrolled camp fire, cooking fire, warming fire and road maintenance
- Smokers and children playing with matches
i. Prevention activities

• The community should be able to assess the fuel accumulation adjacent to their field and forest boundary.

• If you live near a forested area remove or clear the area near your house of any dried out branches, leaves and debris.

• Educate your children regarding negative impact of forest fire.

• Put out cigarette butts, camp fires or any other fire properly.

• Never use stoves, lanterns and heaters inside a tent.

• While burning agriculture debris/orchards make sure to inform the nearest forest office and adopt proper guidelines provided by foresters.

• Form community based forest fire management groups within the community.

• Educate cattle herders not to make any fire in the forest.

• Patrol adjacent forested area around the community regularly.

• Community could request training in basic safety and fire fighting techniques from the forest officials.

• Individuals can register with the Department of Forest as forest fire volunteers and get trained in fire fighting techniques.
ii. Safety measures during forest fire out break

- At the first sign of a forest fire, leave the area immediately by established trails or roads.
- Inform the nearest forest office as soon as possible.
- Don’t run uphill from fire unless a safe refuge is nearby.
- If escape routes are blocked, shelter in running streams or large bodies of water.
- Don’t run blindly from fire or attempt to run through the flames.
- Watch out for wind direction and speed.
- Never move alone.
- If your house is near a forested area- remove all combustible materials from your surroundings.

iii. Suppression/actual combat

If you are attending fire suppression activity study natural factors such as wind direction, wind speed, weather, topography, fuel load, rolling stones and falling of branches for your own safety.

- Make fire/control line if possible.
- Always remember to work in a group or two so that you get help incase you are injured.
- Always wear helmet if available as it will provide dual purpose protection i.e. protection from heat and falling object.
- Always wear long trousers and long sleeved shirt of wool or cotton, avoid synthetics and rubber boots.
- “Look up” and “look around” at regular intervals and inform others about trees and branches that are about to fall.

- If threatened by fires in an open area always move towards burnt area. If escape routes are blocked, take shelter in running streams or large bodies of water.

- Watch out for power lines.
- Cooperate and coordinate with the forest personnel.
- Watch-out for risk to any property or monuments like lhakhang/ monasteries if so try to inform the local leaders and create fire line around it.

- At the site always follow the instructions of the Incident Commander.
- Know the basic principles, terminology and fire behaviors.
8. FIRE SAFETY AND PROTECTION TIPS

General fire safety and protection tips
• Make sure all family members know what to do in the event of a fire. Prepare for a fire emergency plan with the whole family. Practice your escape plan at least twice a year.

• Test windows and doors—do they open easy enough? Are they wide enough or tall enough?

• Feel all doors before opening them. If a door is hot, get out another way.

• Choose a safe meeting place outside the house.

• In a fire, time is critical. Don’t waste time getting dressed, don’t search for valuables. Just get out!

• Practice alerting other members. Yelling, pounding on metallic object, bells, siren, whistles, etc. Practice yelling “FIRE!”

• Always keep a torch with you.

• Always sleep with bedroom doors closed as this will keep deadly heat and smoke out, giving additional time to escape.

• Stay low and crawl out. One breath of smoke or gases may be enough to kill.

• Practice evacuating the building as in a real fire situation, smoke will make it difficult to see.

• Learn to stop, drop to the ground, cover your face with your hands and roll if your clothes catch fire.
9. FIRE SAFETY RULES

Heaters Need Space
• Keep heaters at least 3 feet away from anything that may burn. Never leave heaters unattended.

Smokers Need To Be Extra Careful
Carelessly discarded cigarettes are a leading cause for fires. Keep large, deep non-tip ashtrays and soak butts with water before discarding them.

Cook Carefully
Never leave cooking unattended. Keep cooking areas clear of combustibles. Keep handles of your pots turned inward. If grease catches fire, carefully slide a lid over the pan to smother the flames and turn off the burner.

Use Electricity safely
If smoke arises from an electric appliance or gives an unusual smell, unplug it immediately and have it repaired before using it again. Replace frayed or cracked electrical cords. Don't overload extension cords or run them under rugs. Never tamper with the fuse box or use improper size fuses.

Cool a Burn
If someone gets burned, immediately place the wound under cool water for 10 to 15 minutes. Never put butter or any grease on a burn. If the burn blisters or chars, see a doctor immediately!

• Matches and lighters are tools, NOT TOYS. In a child’s hand, matches and lighters can be deadly! Store them where children can't reach them. Teach children that matches and lighters should only be used by adults or with adult supervision.
10. FIRST AID

Any immediate assistance or treatment given to a casualty who is injured or suddenly taken ill, before the arrival of skilled medical help is known as first aid. In an emergency situation, injuries are often aggravated due to lack of adequate and proper care. Proper first aid always helps to reduce casualties in a post disaster situation.

The aim of first aid is to:

1. Preserve life and limbs
2. To limit further injuries or limit worsening of the injury
3. To promote recovery

First aid is limited to the assistance rendered at the time of emergency with materials that may be available. Redressing of injuries and any amount of after treatment is outside the scope of first aid.

Always remember the golden rule: “first do no harm”

If possible, a first aid provider should use Personal Protection Equipments (PPE) such as a personal mask, latex gloves, eye protection and apron/gown, if necessary.

I. Administering first aid

As a first aid provider, perform first things first such as prioritizing and carrying out first aid procedure quietly without panic.

I. Initial assessment (primary survey)

• After ensuring your own safety, check for general responsiveness of the victim.
• Always call for help
• Assess the casualty in the position he was found.
• Check for Airway, Breathing and Circulation (ABCs of resuscitation). These three are required for maintaining life.
• Check for the level of consciousness by:
  - Tap on shoulder and ask “are you OK”
  - Gently shake him or pinch him gently
• Conscious victim’s ability to speak ensures proper airway or that the air passage is not blocked.
• For unconscious victim, put your ear over victim’s mouth and nose and listen for breathing. If you do not see, hear or feel patients breathed air, or the victim is not breathing normally, start Cardiopulmonary Resuscitation (CPR).
• After you have determined victim’s responsiveness and breathing, check for adequate circulation by feeling the pulse in the side of neck.
• After ensuring that the patient is conscious and breathing normally, then proceed with your next assessment (secondary survey)
• Check for deformity, obstruction, tenderness and swelling in head, neck, chest, back, abdomen and pelvis.
II. Cardio-Pulmonary Resuscitation (CPR)

To help a person who may have stopped breathing, a CPR needs to be performed quickly. Following steps can be used:

a. **Perform initial assessment**
   - Always perform the initial assessment in the position the victim is found. If victim needs to be turned on his back for CPR, move the neck and body at the same time like rolling a log.
   - Shake the person gently and check for response.
   - Open the person’s mouth using the “head tilt chin lift” technique and check if there are any foreign objects in mouth or throat and remove them.
   - Check breathing by placing your face close to the mouth and observing the chest. Look, listen and feel for signs of breathing for up to 10 seconds. If the casualty is not responding (unconscious) and not breathing normally, call for help and start performing CPR.

b. **CPR**
   1. Perform external chest compressions by placing the heel of one palm at the lower half of the breast bone and keeping fingers off the ribs. Cover this hand with the heel of the other hand.
2. Keep arms straight and push down vertically about 4 to 5 cm and then release. Do not lift hands off the chest between compressions. Complete 30 compressions in 18 seconds.

3. After one cycle of compressions tilt head back, pinch nose and give two short breaths of mouth-to-mouth respiration.

4. Complete 5 cycles of this routine (compressions and mouth-to-mouth) within 2 minutes. Check pulse after every 5 cycles.

5. Stop compressions as soon as pulse returns and check for breathing. If there is no breathing continue mouth-to-mouth respiration until natural breathing is restored.

6. Cover your mouth with clean cloth/handkerchief to prevent transmitting infections when giving mouth to mouth rescue breathing.

7. Continue CPR till you are completely exhausted, or someone takes over. Never leave the victim alone. To perform CPR with proper CPR techniques and procedures one should undergo CPR training.
III. Treating wounds

Wounds do not kill the casualty immediately, but the bleeding will. So the immediate aim of first aid is to stop bleeding. Only after bleeding is controlled, then proceed with the rest of the care of wound.

- Taking care of open wounds
- Put on personal protection equipment (protect yourself)
- Expose the wound
- Control bleeding
- Prevent contamination
- Dressing and bandage
- Treat for shock
IV. Controlling Bleeding

Bleeding is simply blood escaping from its vessels. The main methods to stop bleeding are by applying direct pressure.

• Place your palm or fingers over the bleeding point and apply direct pressure. Bleeding usually stops after a while.

• With this method there is also a slight risk of germs infection into the wound. To prevent this, place a clean piece of material over the wound before applying pressure.

• Do not use this method if there is a foreign body in the wound or if a fracture is suspected.

V. Treating fractures:

A fracture is a broken or cracked bone. We can recognize the presence of fracture by:

- History of injury
- Presence of pain
- Deformity and swelling
- Unable to use that part (loss of function)
- Grating sensation on moving the parts (never try to illicit it)
a. Types of fractures

- Closed fractures – in which the overlying skin is intact
- Open fractures – in which skin is broken or torn from either inside or outside (danger is entry of infections)
- Dislocation – in which bone is moved out of its normal position and remains that way
- Sprain – in which muscles or tendon is over stretched

Dangers of fractures:- The sharp end of fracture bone can cause damage to surrounding structures like:
- Nerve: loss of sensation and movement in part distil to fracture
- Blood vessels; loss of blood supply to part distal to fracture leading to ischemia and necrosis.
- Muscles: loss of movement

b. Taking care of fractures

- First control bleeding if present.
- Avoid unnecessary movement.
- Immobilize the injured joint in the position in which it was found.
VI. Treating burns

Skin acts as a defense protecting our body from the entry of harmful micro organism. Any break (burns) in the skin opens the way for all disease causing micro organism to enter the body. It also leads to loss of fluids and heat from the body.

Burns are often classified on the basis of percentage of the body surface area involved. The more the percentage of burns, more will be the complications like infections, loss of body fluids leading to shocks, etc. The other classification is depending on the depth of burns. It is not very important from the management point of view.

- Superficial - first degree burns which involve only the top layer of the skin.
- Partial thickness – second degree burns in which the superficial layer of the skin is damaged and burns extend to the next layer
- Full thickness – third degree burns in which all the layers of the skin are burnt including the fatty layers.

a. Taking care of burns

- Reduce the spread of heat, pain and swelling by placing the burnt area under cold running water or immersing in cold water for at least 10 minutes.
- Gently remove any rings, watches, belts or constricting clothes from the injured area before the swelling begins.
- Cover the burns with clean, preferably sterile, non fluffy material, use dry sterile dressing
- Do not break any blisters or anything sticking in the burn.
- Do not apply lotions, ointments or fat to the injured area.
VII. Treating Snake Bites

Snakes are almost always more scared of you than you are of the snake. Giving the snake the opportunity to escape prevents most bites. If outdoors, you can help prevent significant bites by wearing boots while hiking. Long pants can reduce the severity of a bite. If your occupation exposes you to dangerous snakes on a regular basis, preplanning before a potential bite may save your life. If you are ever bitten by a snake:

- Stay calm and get safely away from the snake.
- The less the victim moves the bitten site, the less likely the venom will spread through the body and cause damage.
- Lie down the victim with the affected limb lower than the heart. Keep the limb immobilized. If practical, splint the limb.
- Treat for shock and preserve body heat.

- Remove any rings, bracelets, boots, or other restricting items from the bitten extremity. It will swell.
- Apply a light constricting band about 2” above the bite. This band should be made up of wide, soft material, which could be a handkerchief or shredded clothing. The band should only be as tight as the band the nurse applies when taking a blood test. Release the band every 30 minutes to allow the blood flow to distal part, for few seconds and apply it again moving more proximally.
• Wash the bite area with soap and water (if available)

• If the victim has to walk, sit calmly for 20-30 minutes to let the venom localize at the site, then proceed calmly to the nearest source of help and try to avoid unnecessary exertion which will stimulate circulation of the venom.

• Get the victim to definite medical care for antivenom, to provide relief from the toxic effects of the bite.

• Identifying the type of snake will help in getting the specific antivenom.

• DO NOT cut or suck the bite. Cutting into the bite site can damage underlying organs, increase the risk of infection and does not result in venom removal. The additional tissue damage may actually increase the diffusion of the toxins throughout the body.

• NEVER try to suck out the venom by mouth. You can try the suction cup in a snakebite kit if it doesn’t delay other needed treatment. Suctioning seldom provides any measurable advantages, however.

• Do not apply cold and/or ice packs. Recent studies indicate that application of cold or ice makes the injury much worse.

• Do NOT use ice. Ice does not deactivate the venom and can cause frostbite.

• Do NOT use alcohol. Alcohol may deaden the pain, but it also makes the local blood vessels bigger, which can increase venom absorption.
VIII. Treating dog bites

Due to human interaction with canine, dog bites are common, especially in children. Responding to a dog bite should always start with the safety for all involved.

• As with other wounds, you should stop any bleeding by putting pressure on the wound.
• Once the bleeding is controlled, clean the wound with soap and warm water. Do not be afraid to clean inside the wound. Be sure to rinse all the soap away, or it will cause irritation later.
• Cover the wound with a clean, dry dressing. You can put antibiotic ointment on the wound before covering. Watch for signs of infection:
  - Redness
  - Swelling
  - Heat
  - Weeping pus

• Any unidentified dog runs the risk of carrying rabies. If the dog cannot be identified and the owner cannot show proof of rabies vaccination, the victim must seek medical attention. Rabies is always fatal to humans if not treated.
• Wound may also need stitches. If the edges of a laceration are unable to touch, or if there are any avulsions, the wound will need emergency medical attention. Wounds on the face or hands should be seen by a physician because of the likelihood of scarring and loss of function.
• Though most dog bites aren’t fatal the victim should be taken for immediate medical attention for antibiotics, a tetanus shot and rabies vaccination. Children need to be treated with rabies vaccine within 48 hours of being bitten if the dog has not been vaccinated or is unidentified.
IX. Choking

Choking is caused when the airway of a person is obstructed.

a. Watch for signs of choking
   • Victim will be probably clasping their necks with their hands.
   • In case of complete obstruction, victim cannot speak or make noise.
   • If victims are able to speak, breath or cough, they are attempting to expel the foreign object. We should not interfere with the process.
   • However, if victim has difficulty breathing or speaking, we should perform the abdominal thrust.

b. Performing the abdominal thrust
   • Stand behind the victim and wrap your arms around the waist.
   • Grasp one fist with your other hand. Place the thumb side of the fist in the midline, slightly above the navel.
   • Press your fist into victim’s abdomen with quick inward and upward thrust. Each thrust should be decisive and with the intention of relieving the obstruction.

c. Chest thrust for obese persons or pregnant women
   • Stand behind victim and place arms under the victim’s armpits and encircle the chest.
   • Grasp one fist with the other hand, placing the thumb side of the fist in the middle of the victim’s breastbone.
   • Press with quick backward thrust.
X. Transportation of casualties

As a first aid provider, you may have to transport casualties with the “manual” way as stretcher may not be available. You can use the following methods to transport depending on the situation:

a. Human crutch:
   - Use this method when the victim is conscious and can walk with some assistance.
   - Hold the victim firmly around the waist and use your shoulders to support the victims arm while the victim rests her/his body weight on you.

b. Fireman’s lift:
   - This method is suitable for lightweight either conscious or unconscious.
   - Stoop low, bend the victim over your shoulders and lift him up. For more stability, wrap your arm around victim’s leg and hold victim’s arm over your chest.

c. Pick a back:
   - This is an excellent method to transport the victim if the victim is conscious, lightweight and able to hold on using their arms.
   - Ensure stability by firmly grasping the victim behind the knees with the arms held together securely across your chest.

d. Cradle method:
   - Use this method if victim is child or lightweight adult.
   - Slip your arms under victim’s thighs and shoulders.
Practice your Plan