Emergency Preparedness 4 Hr

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PURPOSE

The purpose of this course is to provide health care professionals, RN, LPN, APRN, Therapists, all Healthcare providers, CNA /HHA and other Professionals /individuals with training to be prepared and able to recognize and effectively respond to Medical emergencies, natural disasters such as Hurricanes, Floods, tornadoes, Wildfires, Bioterrorism, Radiological, Pandemic Influenza, as well as Cardiac and Respiratory emergencies.

Objectives / Goals

After successful completion of this course the participants will be able to:

1. Define Medical Emergency
2. Discuss the importance of First aid, CPR and AED training and utilization
3. Define Natural Disasters
4. Describe 3 effective strategies to implement prior to natural Disasters such as floods and hurricane.
5. Describe 3 effective strategies to implement during power outage
6. Discuss biological agents
7. Describe 3 ways in which Biological agents can be spread
8. Describe the 3 basic groups of biological agents and safety measures
9. Discuss how Radiological Exposure Devices can expose people to radiation.
10. Discuss preparation methods, staying informed and what to do before, during and after the emergencies.
11. Discuss various resources that are available within the community.

INTRODUCTION

Emergency Preparedness

An emergency can occur at any time without warning or alert to the individuals or the community.

A medical emergency is defined as an acute illness or injury that poses an immediate risk to a person's life or long-term health.

Everyone is at risk for experiencing a medical emergency; the physician; Dentist, nurse, patients, or a family member who is accompanying the patient may experience a sudden cardiac arrest etc.

An individual may experience a medical emergency in any setting, such as within the office, dental chair, fall with injuries and bleeding in the waiting room or the staff may also experience a sudden medical emergency.

Medical Emergencies include, but not limited to:

- Difficulty breathing,
- Obstructed airway,
- Patient losses consciousness,
- Signs/ symptoms of shock,
- Accident with impact injuries,
- Severe bleeding,

- Burns that are severe,
- Falls with injuries and /or bleeding,
- Traumatic Head injury,
- Drug overdose,
- Fracture with bone piercing through the skin,
- Possible fracture of spine, neck, head, femur or pelvis,
- Chest pain, tightness or pressure,
- Unable to move,
- Decreased or loss of sensation,
- Open wound,
- Cardiac arrest.

Equipment and supplies

All healthcare facility should have a first aid kit and emergency medication box available on hand; first aid is the immediate care that is provided or given to an ill or injured person.

For best patient outcome, response to emergencies should be initiated immediately until advance medical care can be given to the patient who is experiencing a medical emergency.

It is very helpful to have a first aid kit and emergency medication supplies available. These kits should be checked and restocked as needed; check to make sure supplies are not expired and items that have been used are replaced. Keep a First Aid kit at work, in the office, home and in the car.

First aid kit

A First Aid Kit should contain items such as:

- Gloves
- Adhesive tape (Hypoallergenic)
- Bandage strips
- Elastic wrap bandages/ Ace bandage
- Roller gauze
- Nonstick sterile bandages
- Eye shield or eye pad
- Face mask
- Soap (Anti-bacterial)
- Hand sanitizer
- Splints in various sizes
- Instant cold packs
- Scissors
- Cotton balls
- cotton-tipped swabs
- Safety pins
- Antibiotic ointment
- Antiseptic towelettes
- Duct tape
- Thermometer
- safety pins
- First-aid manual
- Plastic bags

OSHA standard 1910.151 (b) also states an employer must have adequate first aid supplies that is readily available for use, if an employee has an injury on the job. OSHA does not have a minimum requirement but references American National

Standards Institute ANSI Z308.1-2003 Minimum Requirements for Workplace First Aid Kits. According to the ANSI document, a basic workplace first aid kit should contain:

- At least four sterile pads, 3 in. x 3 in. (7.5 x 7.5 cm)
- At least one absorbent compress, 32 sq. in. (81.3 sq. cm.) with no side smaller than 4 in. (10 cm)
- At least 16 adhesive bandages, 1 in. x 3 in. (2.5 cm x 7.5 cm)
- One roll of adhesive tape, 5 yd. (457.2 cm) total
- At least six applications of burn treatments, 0.5 g (0.14 fl. oz.)
- One triangular bandage, 40 in. x 40 in. x 56 in. (101 cm x 101 cm x 142 cm)
- At least ten packets of antiseptic, 0.5g (0.14 fl oz.) applications
- Two or more pairs of medical exam gloves.

Additional optional items include:

- CPR barrier device
- Four 2x2 inch bandage compresses
- Two 3x3 inch bandage compresses
- One roller bandage, three inches wide
- One 4x4 inch bandage compresses
- Two roller bandages, two inches wide
- One chemical cold pack, 4x5 inch
- One ounce of eye wash
- One eye patch

OSHA recommendation does not include the automated external defibrillator (AED), but current emergency cardiac care guidelines encourages that an external defibrillator be present in most public places.

It is recommended that the First Aid Kit should contain the minimum requirement such as:

Item	Minimum Required	Size
16	Adhesive Bandages	1x3 inches
1	Adhesive Tape	2.5 yards total
10	Antibiotic Applications (Increased)	.14 fl. ounces
10	Antiseptic	.14 fl. ounces
1	Breathing Barrier	
1	Burn Dressing	Gel Soaked and 4x4 inches
10	Burn Treatment (Increased)	1/32 ounces
1	Cold Pack	4x5 Inches
2	Eye Covering with means of attachment	2.9 sq. inches
1	Eye/Skin Wash	1 fl. ounce
1	First Aid Guide	
6	Hand Sanitizer	1/32 ounces
2	Medical Exam Gloves	Pairs
1	Roller Bandage	2 Inches x 4 yards
1	Scissors	
2	Sterile Pad	3x3 inches
2	Trauma Pad	5x9 inches
1	Triangular Bandage	40x40x56 inches

Tab-A minimum first aid kit requirement

Emergency medications & supplies

Emergency medications and supplies should also be available. These kits should be checked and restocked as needed.

Check to make sure medications are not expired and items that have been used are replaced.

Staff Training

It is very important and helpful for all staff / employees to receive training and have some idea regarding first Aid, CPR/AED and how to appropriately respond to medical emergencies, so that individual can provide some assistance to the ill or injured person, which can possible save a life, until patient is transported to more advance care settings.

INFECTION CONTROL

According to the Centers for Disease Control and Prevention (CDC), infection control refers to guidelines / regulations that are designed for educating, reporting, monitoring, managing and isolating healthcare related and/or community acquired infections. Therefore, infection control measures are important to control, eliminate or minimize employee exposure to bloodborne pathogens and communicable diseases (CDC.gov 2019).

Protect yourself from bloodborne pathogens.

According to the Centers for Disease Control and Prevention (CDC), bloodborne pathogens can threaten your health and your wellbeing by causing you to develop sickness, disease/ infection. If you have a first aid kit available, sanitize your hands and put on sterile gloves. If gloves and /or sanitizer are not available, protect your hands by using extra gauze, cloth or handkerchiefs. Try to avoid direct contact with the victim's blood. If you have made contact, clean yourself off as soon as possible (CDC.gov, 2019).

Term	Definition
Bloodborne pathogens	pathogenic microorganisms that are present in human blood and can cause disease in humans.
Pathogens	Microorganisms that cause diseases.
Microorganism	An organism or infectious agent of microscopic or submicroscopic size

Regulations

Infection control standards and policies published by Occupational Safety and Health Administration (OSHA), the Centers for Disease Control and Prevention (CDC) the Association for Professionals in Infection Control and Epidemiology (APIC) and National Institute of Occupational Safety and Health (NIOSH) have made recommendations. These guidelines are designed to reduce the transmission of bloodborne and other pathogens and apply to every patient regardless of their diagnosis (CDC. Gov 2019).

These guidelines reinforce the idea that body substances such as oral and body secretions; blood, breast milk, urine, feces, airborne spray from coughing or droplet, vomits, tissue, wound, or any other drainage; can be a source of infection. These guidelines also explain that the environment can also be a source of infection (CDC.gov, 2019).

Universal Precaution

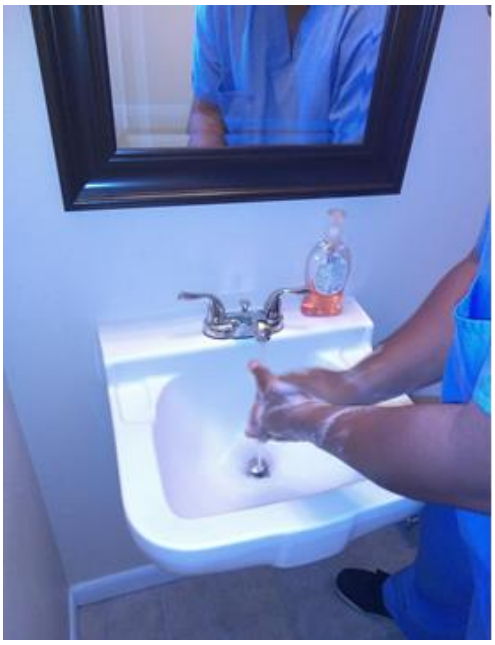
Universal Precaution is an infection control principle that treats all human blood and other potentially infectious materials (OPIM) as infectious. OSHA regulation for preventing any exposure to HBV, HIV, and HCV in the workplace and requires the proper use of Personal protective equipment (PPE) (CDC. Gov, 2019).

Standard Precautions

Standard Precautions: recommendations from the Centers for Disease Control and Prevention (CDC) which focuses on all body fluids, whether or not blood is present. Body fluids from excretion, secretion (except sweat), and contact with non-intact skin or mucus membranes (CDC.gov 2019).

Hand washing

The hands must be washed before and after patient contact. The hands are to be washed during patient care if they become soiled. Wash the hands with liquid soap and water immediately after removing gloves.



The components of good hand washing include:

Using adequate amount of soap
Rubbing the hands together to create some friction and
Rinsing under running water

The mechanical action of washing and drying removes most of the transient bacteria that is present. Washing hands thoroughly between patient contacts and after contact with body fluids, blood, excretion, secretion, articles or equipment contaminated by them is an important component of infection control and isolation precautions (CDC.gov, 2019).

Some institutions recommend use adequate soap, make lather and continue rubbing for *15-20 seconds*. To wash for the correct time, sing “Happy Birthday to You” twice.
If soap and water are not available, you can use an alcohol-based hand rub to clean your hands. These foam gels significantly reduce the number of germs on the skin and are fast acting. Follow your institutions’ policy and procedure.

Personal protective Equipment (PPE)

Personal protective equipment or PPE are protective wear/ materials used to protect you from any splashes or body exposures to blood, and or other contaminates. PPE are equipment such as gloves, scrubs, lab coat, goggles, gowns, surgical shoe covers, aprons, caps etc.

Disposable face masks are to be worn whenever there is a reasonable expectation that droplet transmission may occur. Appropriate use of PPE is required by the Bloodborne Pathogens standard, if exposure to blood is anticipated (CDC. GOV 2019).

CLICK on the links below CDC.Gov resources:

Inspecting PPE Prior to Donning - CDC Video resource

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

Prioritizing care

Priority refers to actions that are established in order of importance or urgency. When the healthcare provider or other individual arrives on scene of an incident, medical emergency or accident, the person who is first on the scene, needs to assess the situation.

Your initial observations will allow you to take appropriate actions that will assist the person who is experiencing the medical emergency, without causing further harm or injury to that person or to yourself.

Prioritize all actions in order of urgency/ importance. There might be several injured persons at the scene; prioritizing care will allow you to determine who will need assistance or treatment first.

Conduct an Initial assessment

Always check the environment, look carefully to make sure the environment is safe. Do not just rush to the person who is having a medical emergency.

There might be dangers that you are not aware of, for example, gas leakage or other environmental hazards, such as electrical issues making it unsafe to get to the person who is having a medical emergency, therefore in this instance, you must call 911 tell them what you observed, person who is having a medical emergency and note the

environmental dangers. The 911 operator will ask you for important information regarding location etc. so stay on the line until that 911 operator tells you otherwise.

An individual may have a medical emergency in any setting, such as the office, dental chair, fall with injuries and bleeding while in the waiting room etc.

If in your initial assessment you observed that the environment is safe.

Check the person for responsiveness; call out “Do you need help”? If you receive no response, tap the individual on the shoulder and call out again “are you ok”?

If you have encountered an emergency situation and the person who is having a medical emergency is **conscious**.

Update the EMS personnel with this information, when they arrive on scene. Remember, If the person is conscious and does not give you his/her consent, ***do not*** give care but call 911.

Term	Definition
Consent	To agree to do or allow something: to give permission for something to happen or be done.

If the person who is having a medical emergency is unconscious and therefore unable to give verbal consent; in this situation you will use implied consent. The individual is also unable to give you clues regarding what has happened but as you assess the him/her, check for Medic Alert bracelet, watch, sports bands, necklace, shoe tags, ID bracelets which may provide additional information or diagnosis.

Check the person who is having a medical emergency to find out whether he/she has a severe injury that requires a call to 911 or if the injury is minor and can be easily taken care of or if you are not sure regarding the severity of the victim status, call 911.

HEAD-TO-TOE ASSESSMENT

Check the victim from the Head-to-Toe. Start by looking at the top of the head, face, ears, nose and his/her mouth.

You are looking for bumps or swelling, bruises, discoloration, cuts, fluid leakage, bleeding and any unusual depressions or indentation in the skin.

- Look at the coloring of the skin,
- Look at the color changes on the face (pale, flushed),
- Look at the color changes on the lips (cyanosis, blue),
- Check how the skin feels (moist, sweating, increased warmth/hot or cold),
- Check the forehead with the back of your hand (for temperature changes),
- Monitor for changes in breathing and consciousness,
- Check/ look all over the body, try not to move the victim,
- Observe the victim for signs/ symptoms of pain (the victim may grimace or make have facial expression changes when a part of the body is touched),
- Listen for sounds of discomfort/pain (moaning or groans).

Cardiac Arrest

Cardiac arrest means that the heart has stopped beating, therefore there will be a loss of blood flow throughout the body. If cardiac arrest is not treated within minutes, it typically leads to death.

Some Signs and symptoms include but not limited to:

Excessive sweating (diaphoresis),

Loss of consciousness,

Abnormal breathing,

Absent breathing,

Chest pain,

Shortness of breath,

Nausea.

Causes of Cardiac Arrest

Some of the causes of cardiac arrest include:

Coronary artery disease,

Heart failure,

Major blood loss,

lack of oxygen,

Extremely low potassium,

Intense workout activity /physical exercise,

Some inherited disorders may increase the risk (such as long QT syndrome).

Preventative measures

Instruct patients that some preventative measure include but not limited to:

Avoid smoking,

Maintaining a healthy diet,

Maintaining a healthy weight,

Participation in physical activity.

Treatment for Cardiac Arrest

Treatment for cardiac arrest involves performing immediate cardiopulmonary resuscitation (CPR).

Every healthcare provider / employee should receive training which includes:

CPR/ AED,

First Aid,

As well as other lifesaving training.

Cardiopulmonary Resuscitation (CPR)

Chest Compressions and Rescue Breaths

Cardiopulmonary resuscitation (CPR) involves giving the patient

sets of chest compressions which is followed by 2 breaths (refer to as rescue breaths). Please follow the latest guidelines as they tend to change.

Chest Compressions

To perform the 30 compressions; Press down on the patient's chest.

After each of the chest compression, allow the chest to return to its normal position allowing blood to flow back into the heart.

The chest compressions squeeze the heart between the sternum and spine, causing the blood to move from the heart to the vital organs and throughout the body.

Rescue Breaths

Rescue Breaths are given after each set of 30 chest compressions, this will provide oxygen into the patient's lungs.

Note -

Keep in mind that Cardiopulmonary resuscitation (CPR) procedure will vary in technique depending on the patient.

Performing CPR on an Adult,

Performing CPR /AED on the child,

Performing CPR/ AED on an infant.

Automated External Defibrillator (AED)

Automated External Defibrillator (AED)

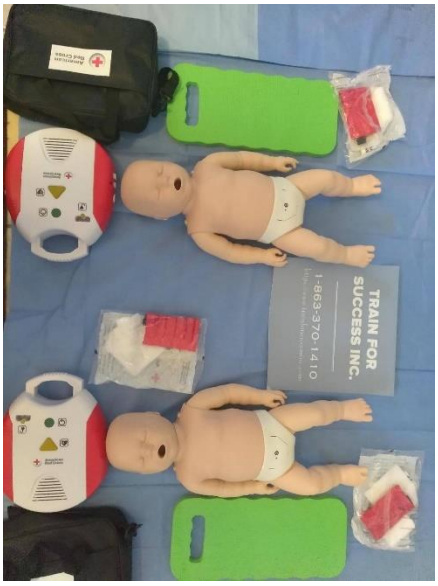
Automated External Defibrillator (AED) is a portable electronic device that automatically analyzes or diagnoses life-threatening cardiac arrhythmias and is able to treat the cardiac arrhythmias through defibrillation (CDC.gov, 2019).

Defibrillation is the application of electricity which stops the cardiac arrhythmia and allows the heart to resume an appropriate cardiac rhythm (CDC. Gov, 2019).

Note -

When the patient is in cardiac arrest, use the AED as soon as possible.

Procedures for using AED on the Adult, child and infant will have variations; size and age of the patient is also another consideration.



Use the AED (requires training)

First the AED must be turned on,

Then remove or cut away the patient's clothing to expose the patient's chest.

Note -

The chest needs to be dry to apply the AED pads (pads will adhere well when skin is dry).

If the patient's chest is wet, dry it using a gauze pad or a towel.

Avoid the use of alcohol wipe to clean the skin (alcohol is flammable).

Then apply the AED pads (to the appropriate sites as indicated on the manufacturer instructions).

Analyzing the heart rhythm

There are many different types of AEDs that are available, but they are similar to operate.

Most AEDs will begin to analyze the heart rhythm after the pads are applied; some will require that you press the analyze button to start the process.

While the AED is analyzing the heart rhythm, everyone needs to avoid touching the patient. If you touch the patient this can cause an inaccurate reading and poor interventions.

Pushing the shock button

After the AED analyze the rhythm, it will tell you to push the shock button if a shock is advised.

Before pressing the shock button, shout out to alert everyone to stand clear.

If anyone touches the patient while the AED is delivering the shock, that person is at high risk for receiving a shock (stand clear).

After the AED delivers a shock, resume CPR immediately.
Start with chest compressions.

The AED will continue to assess the heart rhythm every 2 minutes.

If the AED determines that no shock is advised or needed, then resume CPR immediately resume CPR (start with chest compressions).

The AED will continue to give prompts.

Continue giving CPR / AED use until patient has sign of life or the emergency personnel arrive.

If patient has signs of life – STOP CPR.

Leave the AED in place and listen carefully for the prompts.

Increasing Public Awareness of Cardiac Arrest, CPR/ AED

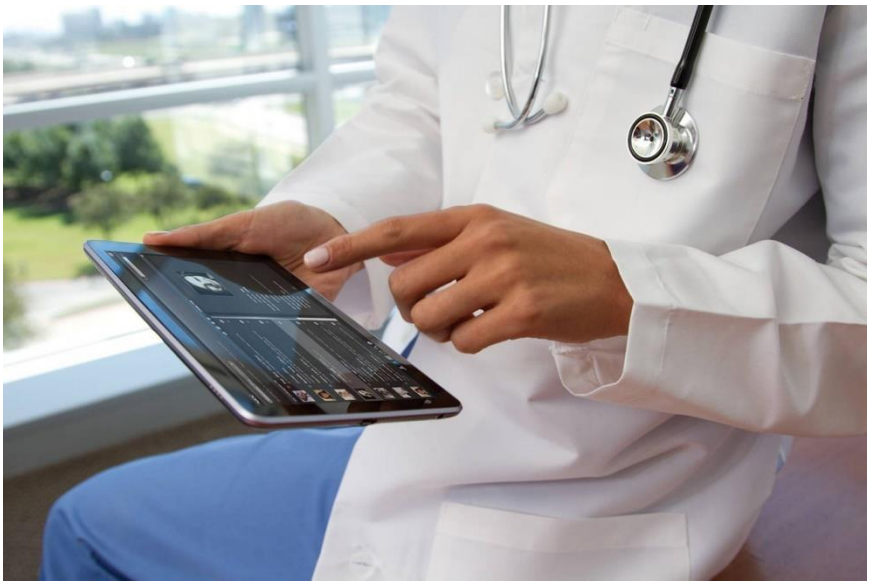
According to the CDC, increasing public awareness of Cardiac Arrest, CPR, and AED is needed (CDC.gov 2018).

Some of the approaches include:

Raising awareness about the difference between cardiac arrest and heart attack,

Educating the community on CPR and the use of AED.

Remove common myths that cause bystanders or people in the community to delay intervening in sudden cardiac arrest (CDC.gov 2018).



Respiratory Distress

Respiratory Distress

Respiratory Distress is difficulty with breathing and may occur due to several factors or patient diagnosis.

Respiratory distress may occur due to several factors, such as:

- Swelling in the mouth
- Swelling in the throat
- Fluid in the airway,

- Vomiting with aspiration,
- Pneumonia,
- Bleeding from trauma to respiratory tract,
- Chocking,
- Heart failure,

- Pulmonary emboli,
- Inhaling chemicals,
- Septic shock (infection)
- Trauma,
- Lung transplant,
- and more.

Signs or symptoms of Respiratory distress

Signs or symptoms of Respiratory distress include but not limited to:

Shortness of breath,

Nasal flaring,

Rapid breathing,

Shallow breathing,

Grunting sounds while breathing,

Cyanosis (bluish color of the skin/ mucus membranes

Apnea.

Respiratory distress may lead to respiratory failure due to inadequate gas exchange.

Treatment

There are several types of breathing treatments that are available for different diagnosis and various conditions, such as:

- Bronchodilators (to relax and open the airway),
- Antimicrobials (to treat respiratory infections),
- Mucolytics (to relieve, clear, relieve and eliminate mucus secretions),
- Oxygen,
- Nebulizers,
- Suctioning,
- Airway equipment (oropharyngeal airway (OPA) and Nasopharyngeal airway (NPA),
- and more

Choking Patient

Choking may cause the airway to become blocked. This may cause the airway to be completely blocked and does not allow any air to pass through or partial blocked. Choking often occurs due to foreign objects, such as fluids; vomit, blood, food, swelling in the throat, toys etc.

Some risk factors for choking include:

Eating or drinking too quickly,

Dentures that are poor fitting or dental problems that affect the patient's ability to chew food properly,

Talking with food in the mouth,

Child places objects or toys in the mouth,

Some medical conditions can increase risk for choking such as a muscular or neurological condition that affects the patient's ability to chew and /or swallow.

Treatment for the choking patient

Choking can quickly lead to unresponsiveness and death if the appropriate interventions are not implemented.

If the patient is choking on an object and becomes unresponsive CPR needs to be initiated immediately, starting with chest compression.

Note -

After the chest compressions you need to open the patient's mouth and check for the object before giving rescue breath (seek training on how to assist the choking person- certification is provided through AHA, ARC as well as other organization).

The Heimlich maneuver is a technique that can be used to remove objects from the airway (with training from a first aid certification program).

Natural Disasters

Natural Disasters are major adverse events that result from natural processes of the earth such as:

- Tsunami,
- Hurricanes,
- Floods,
- Tornadoes,
- Volcanic Eruptions,
- Wildfires,
- Earthquakes.

Other Disasters include:

Man - Made Disasters

Terrorism

Bioterrorism

Radiological

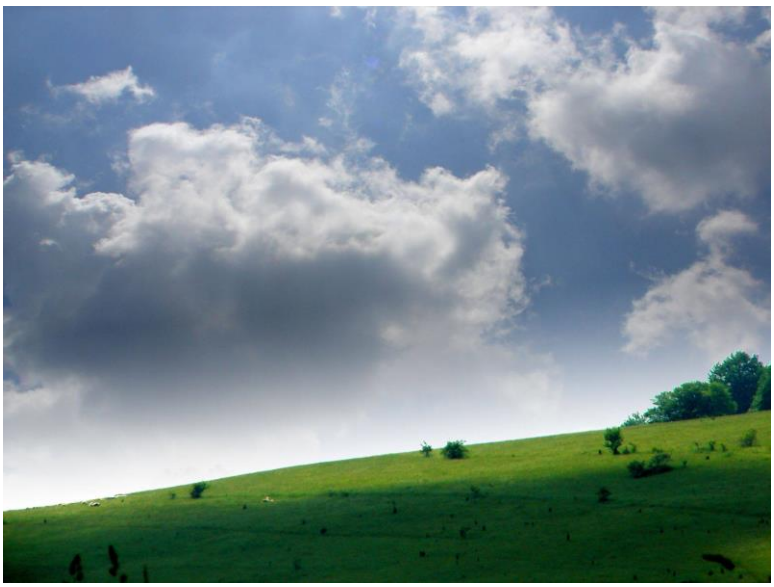
Hurricanes

According to the CDC, hurricanes are massive storm systems that form over warm ocean waters and move toward land. Potential threats from hurricanes include powerful winds, heavy rainfall, storm surges, coastal and inland flooding, rip currents, tornadoes, and landslides. The Atlantic hurricane season runs from June 1 to November 30. The Pacific hurricane season runs May 15 to November 30. Hurricanes:

Can happen along any U.S. coast or in any territory in the Atlantic or Pacific oceans.

Can affect areas more than 100 miles inland.

Are most active in September (CDC.gov 2019).



It is recommended that if you are under a hurricane warning, you need to find safe shelter right away,

Determine what is the best way to protect yourself and family from high winds and flooding.

Go to a designated storm shelter, or an interior room for high winds.

Evacuate if instructed to do so.

Watch television or listen to the radio for emergency information and alerts.

If using a generator, they are of use only outside and away from windows.

The CDC states “Turn Around, Don’t Drown, Do not walk, swim, or drive through flood waters” (CDC. Gov 2019).

Storm Surge

Storm surge is defined as water that is pushed from the ocean and is pushed toward the shore by the force of the winds that is swirling around a hurricane. Storm surge moves very fast and can produce flooding along the coast as well as produce extreme inland flooding. “When hurricanes cause storm surge, over 20 feet of water can be produced and pushed towards the shore and several miles inland destroying property and endangering lives in its path” (CDC.gov 2019).

Storm surge can destroy the roads and foundations as it undermines and erodes material out from underneath them.

Preparation

According to the CDC, you should know your area's risk of hurricanes.

It is also recommended that you sign up for your community's warning system. The Emergency Alert System (EAS) and National Oceanic and Atmospheric Administration (NOAA) Weather Radio also provide emergency alerts (CDC.gov 2019).

For individuals who are at risk for flash flooding, it is recommended that you watch for warning signs for example heavy rain.

Other safety strategies include:

Practice going to a safe shelter for high winds, such as a FEMA safe room,

A small, interior room (without windows) in a sturdy building that is located on the lowest level that is not subject to flooding (CDC.gov 2019).

Based on your location and community plans, make your own plans for evacuation or sheltering in place.

Become familiar with your evacuation zone, the evacuation route, and shelter locations.

Keep all important documents in a safe place,

Create password-protected digital copies of important documents.

Prepare needed supplies for at least three days such as water, nonperishable food, drink, medications as well as supplies / food for the pets.

It is recommended that you protect your property.

Declutter drains and gutters.

Install check valves in plumbing to prevent backups.

Consider hurricane shutters.

Review insurance policies (CDC.gov 2019).

Floods

Preparation

Some effective safety strategies that you can implement include,

Protecting yourself by preparing your home or workplace,

Developing an emergency communications plan and

Knowing what to do when a flood is approaching your home or business.

It is very important to stay informed about what is happening with the storm as it approaches

Always follow the instructions of local emergency management officials.

Protect valuable documents by storing them in a safe, dry place.

Prepare your family: visit Ready.gov for a complete disaster supply checklist, and to find out how to prepare for and what to do during a power outage.

Be ready to evacuate, plan and practice a flood evacuation route. Ask someone out of state to be your “family contact” in an emergency, and make sure everyone knows the contact’s address and phone number.

If you have flood insurance policy with contents coverage, take photos of flooring, clothing, light fixtures, furniture, appliances and anything that could be damaged by the flood.

Having this data can help if you with filing a flood insurance claim if needed.

If you have flood insurance but not sure what your flood insurance policy covers, call your insurance agent and obtain that information.

Pets and Animals

If you have pets, you will need to make a pet and animal plan.

Pets are not allowed at many shelters.

Make plans regarding what to do with your pets if you are required to evacuate your residence.

Available Resources

FEMA's Flood Loss Avoidance fact sheet is a valuable resource or visit the NFIP publications page (see "During the Flood") for more information about what to do before and during a flood (CDC.gov 2019).

POWER OUTAGE

A power outage is when the electrical power goes out. A power outage may lead to disaster may impact the whole community as well as the economy.

Power outages can

Disrupt communications, water, and transportation.

Close retail businesses, grocery stores, gas stations, banks, and other services.

Cause food spoilage

Cause water contamination.

Some effective strategies to protect yourself during a power outage include:

Disconnecting all electronics and appliances, this will prevent damage from electrical surges.

Using generators outside only and away from windows.

Keeping the refrigerators and freezers closed.

Not using gas stoves to heat up home or business.

Making alternate plans for refrigerating medications.

Take an inventory of the items you need that rely on electricity.

Talk to the Physician / healthcare provider about a power outage plan for medical devices powered by electricity and refrigerated medicines.

Find out how long medication can be stored at higher temperatures and get specific guidance for any medications that are critical for life.

Plan for batteries and other alternatives to meet your needs when the power goes out.

Other effective strategies to prepare for a power outage include:

Signing up for local alerts and warning systems.

Monitoring weather reports.

Installing carbon monoxide detectors with battery backup in central locations on every level of your home or Business.

Determine whether your home phone will work in a power outage and how long battery backup will last.

Staying Safe When A Power Outage Threatens

Resources

Click on links below

Worker Safety in a Power Outage
Preventing electrocution by undetected feedback electrical energy

Electrical Safety and Generators
Preventing electrocutions associated with generators plugged Into household circuits

NIOSH Electrical Safety
Publications on electrical safety.

Worker Safety in Storm & Flood Cleanup

What You Need to Know When the Power Goes Out Unexpectedly

Tornadoes

A tornado is defined as a rapidly rotating column of air extending from the base of a thunderstorm down to the ground. The windstorm is often called a twister or whirlwind (looks like funnels). Tornadoes can occur at anytime, anywhere and can destroy everything that is in its part such as buildings, houses, animals, vehicles and can create deadly flying debris, due to intense winds which can be over 200 MPH (weather.gov 2020).

When under a tornado warning

If you are under a tornado warning, safety is priority.

Some important safety strategies include:

If you can safely go to a sturdy building, immediately do so.

Get to a basement, safe room or a storm cellar, if possible.

If you are located in a building that does not have a basement, then go to a small interior room on the lowest level.

It is important to stay away from doors, windows and outside walls.

Never go under a bridge or overpass. It will be safer in a low, flat location.

Be careful and look out for flying debris which can lead to severe injury or death.

Protect your head and neck.

How to stay safe when a tornado threatens

Resources

Click on the links below

Stay Tuned for Storm Watches and Warnings

Preparing for a Tornado

During a tornado

Safety after a tornado

Wildfires

A wildfire is an uncontrolled fire that burns in a natural area for example a forest, prairie or grassland. Wildfires can ruin homes and cause injuries or death to people as well as animals.

Wildfires may be caused by humans or lightning and can happen anywhere and at any time.

Fire risk increases in periods of drought or little rain as well as high winds.

According to the CDC, wildfires can cause flooding or disrupt transportation, gas, power, and communications. Cost the Federal Government billions of dollars each year (CDC. Gov 2019).

Some effective safety strategies include:

Call 9-1-1 if you are trapped

If you are under a wildfire warning, get to safety immediately.

Evacuate if you are told to do so.

Listen for emergency information and alerts.

It is recommended to use N95 masks to keep particles out of the air you breathe (CDC. Gov 2019).

Wildfire Resources

Click on links below

Preparing for Wildfires

Stay Safe During a Wildfire

Stay Safe After a Wildfire

Information for Disaster Evacuation Centers

Pregnancy & Wildfire Smoke

Children & Wildfire Smoke

Asthma & Wildfire Smoke

COPD & Wildfire Smoke

Heart Disease & Wildfire Smoke

Guidance for Health Professionals

Bioterrorism

Biological agents refer to organisms or toxins that can result in harm, incapacitate or kill people, animals /livestock and crops. Unfortunately, a biological attack is the deliberate release of germs or other biological substances that can make every sick (CDC. Gov, 2019).

According to the Centers for Disease Control and Prevention (CDC) biological agents can be spread by

- Person-to-person contact,
- spraying the biological agents into the air,
- by contaminating food and water,
- infecting animals that carry the disease to humans (CDC.gov 2019).

3 basic groups of Biological Agents

The three basic groups of biological agents that could be used as weapons include:

1) Bacteria,

2) Viruses,

3) Toxins.

Biological Threat

According to the CDC, a biological attack may or may not be immediately obvious. In most cases health care workers will report a pattern of unusual illness or there will be an increase amount of people who are experiencing sickness and seek emergency medical attention.

The public would be updated through an emergency radio or television broadcast, or some other signal used in the community, such as a telephone call or a home visit from an emergency response worker.

Protecting yourself, family and your property

Some strategies that can be implemented to protect yourself, your family and your property from the effects of a biological threat include:

Prepare a family emergency plan

Prepare an emergency supply kit

Check with your physician / healthcare provider to ensure all required or suggested immunizations are up to date for you and your family.

According to the CDC, consider installing a High-Efficiency Particulate Air (HEPA) filter in the furnace return duct, which will filter out most biological agents that may enter your house.

During a Biological Threat

According to the CDC, the first evidence of an attack may be when you notice signs /symptoms of the disease / illness which is caused by exposure to an agent.

In the event of a biological attack, public health officials may not immediately be able to provide information on what you should do. It will take time to determine exactly what the illness is, how it should be treated, and who is in danger (CDC.gov 2019).

It is very important during this time to follow these guidelines during a biological threat:

Stay informed

According to the CDC, it is very important to listen to the radio, watch television or check online for official news and information regarding signs and symptoms of the illness /disease, areas affected or in danger, if there are any medications or vaccinations are being distributed, where, when and how to seek medical attention if you start to experience illness.

Aware of an unusual and suspicious substance

According to the CDC, if you become aware of an unusual and suspicious substance,

Quickly get away.

Cover your mouth and nose with layers of fabric that can filter the air but still allow breathing. Examples include two to three layers of cotton such as a t-shirt, handkerchief or towel.

Depending on the situation, wear a face mask to reduce inhaling or spreading germs.

If you have been exposed to a biological agent, remove and bag your clothes and personal items. Follow official instructions for disposal of contaminated items.

Wash yourself with soap and water and put on clean clothes.

Contact authorities and seek medical assistance. You may be advised to stay away from others or even quarantined.

If your symptoms match those described and you are in the group considered at risk, immediately seek emergency medical attention.

Follow instructions of Physicians/ healthcare providers and other public health officials.

If the disease is contagious expect to receive medical evaluation and treatment.

For non-contagious diseases, expect to receive medical evaluation and treatment.

In a declared biological emergency or developing epidemic avoid crowds

Wash your hands with soap and water frequently.

Do not share food or utensils (CDC.gov 2019).

After the Biological Threat

According to the CDC, it is very important to pay close attention to all official warnings and instructions on how to proceed. The delivery of medical services for a biological event may be handled differently to respond to increased demand (CDC.gov 2019).

The basic public health procedures and medical protocols for handling exposure to biological agents are the same as for any infectious disease. It is important for you to pay attention to official instructions via radio, television, and emergency alert systems. Visit the Centers for Disease Control and Prevention for a complete list of potential agents/diseases and appropriate treatments (CDC.gov 2019).

Radiation

Radiation is defined as energy moving in the form of particles or waves. Familiar radiations are heat, light, radio waves, and microwaves. Radioactive material is the material that contains unstable (radioactive) atoms that give off radiation as they decay (CDC.gov 2018).

In the event that there is a radiation emergency, you will need to can take steps to protect yourself, your family as well as your pets or animals.

Some interventions may include:

Sheltering in place (you may be asked to get inside a building and take shelter for a period of time).

Going to the middle of the building or a basement, away from the doors and windows.

Bring your pets indoors.

Drinking bottled water and eating foods that are in sealed containers.

Staying inside will help to reduce your exposure to the radiation. It is important to close all doors and windows.

Taking a shower or wiping off the exposed parts of your body with a damp cloth.

Staying alert for any updates or information as the emergency officials are specially trained to respond to disaster situations and they will provide specific interventions to help keep people safe.

Ensuring that you are using televisions, radios, mobile devices, computers, and other devices to get updated information.

Emergency officials will provide important information on where to go to get screened for contamination (CDC.gov 2019).

Video Resources – CDC.gov – Protective Actions for Radiation

Types of Radiation Emergencies

Radiation emergencies may be intentional such as caused by terrorists or unintentional. Different types of radiation emergencies may include:

- Nuclear Emergencies
- Dirty Bomb or Radiological Dispersal Device (RDD)
- Radiological Exposure Device (RED)
- Nuclear Power Plant Accident
- Transportation Accidents
- Occupational Accidents.

Nuclear Emergencies

According to the CDC, a nuclear emergency involves the explosion of a nuclear weapon or improvised nuclear device (IND). The explosion produces an intense pulse of heat, light, air pressure, and radiation. Nuclear explosions produce fallout; radioactive materials that can be carried long distances by the wind (CDC.gov 2018).

Improvised Nuclear Device (IND)

According to the CDC, the main dangers of an Improvised Nuclear Device (IND) is that an IND would cause great destruction, death and injury, and have a wide area of impact (CDC.gov 2018).

Some of the potential effects for people who are close to the blast site could include:

Burns which can be moderate to severe

Contaminated food and water sources

Injury or death from the blast

Radiation Sickness which is also called acute radiation syndrome or ARS

Flash blindness

According to the CDC, the best way to protect yourself if an Improvised Nuclear Device explodes is to “Get Inside, Stay Inside, and Stay Tuned CDC.gov 2018).”

Dirty Bomb or Radiological Dispersal Device (RDD)

The CDC states that a dirty bomb which is also known as a radiological dispersal device, “is a mix of explosives for example dynamite, with radioactive powder or pellets. A dirty bomb cannot create an atomic blast. When the explosives are set off, the blast carries radioactive material into the surrounding area” (CDC.gov 2018).

Dangers of a dirty bomb

According to the CDC, the main danger from a dirty bomb comes from the explosion and not the radiation. The explosion from a dirty bomb can cause very serious injuries and damage to properties. Only the people who are within close reach to the blast site would be effected or exposed to enough radiation that can cause immediate serious sickness, but this is of great concern because the radioactive smoke and dust can spread over a distance and could be dangerous to the health of those who breathe in the dust, drink water or fluids that is contaminated or eat or ingest foods that are contaminated.

The CDC states that the best way for anyone to protect themselves if a dirty bomb explodes is to “Get Inside, Stay Inside, and Stay Tuned” (CDC.gov 2018).

Radiological Exposure Device (RED)

A radiological exposure device is also called a hidden sealed source. It is made of or contains radioactive material. Radiological exposure devices are hidden from sight to expose individuals to radiation without their knowledge (CDC. Gov 2018).

The CDC states that radiological exposure devices could be hidden from sight in a public place such as in a food court, under a subway seat, or in a busy hallway. People who sit or pass close to the site of a radiological exposure device could be exposed to radiation.

Dangers of a Radiological exposure device

According to the CDC, the dangers of a radiological exposure device depends on:

How long people were exposed or near to the device,

The type and the amount of the radioactive material,

The parts of the body that was exposed.

When individuals are exposed to high levels of radiation, they can develop symptoms of acute radiation syndrome (ARS), or experience radiation burns. It may take hours, days, or weeks for health effects to appear. These effects range from mild to severe such as cancer or death. However, some individuals may not experience any health effects (CDC.gov 2018).

To Report a suspected Radiological Exposure Device

The CDC states that it is very important to immediately report a suspected Radiological Exposure Device to law enforcement officials. You will need to stay as far away from the suspected Radiological Exposure Device as possible. If a Radiological Exposure Device is identified, and you believe that you have been exposed, you will need to listen for instructions from emergency officials and contact your physician / healthcare provider (CDC.gov 2018).

Nuclear Power Plant Accident

According to the CDC, an accident at a nuclear power plant could release radiation over an area; this is called a plume. Nuclear power plants have several safety and security procedures in place, and they are closely monitored by the Nuclear Regulatory Commission (CDC.gov 2018).

Dangers of a nuclear power plant accident

Radioactive materials in the “plume” from the nuclear power plant can settle and contaminate people who are outside, water, food, livestock and buildings. The radioactive materials can also contaminate or get inside the body when people breathe it in, or drink or eat anything that is contaminated. Individuals who are living close to the nuclear power plant and are exposed to the radiation can experience long-term health effects such as cancer (CDC.gov 2018).

Protecting yourself

If you live near a nuclear power plant, you can get emergency information materials from the power company that operates your local nuclear power plant or your local emergency services office. If a nuclear power plant accident happens, the best thing to do is to Get Inside, Stay Inside, and Stay Tuned for instructions from emergency officials (CDC.gov 2018).

Transportation Accidents

Radioactive material is typically transported by rail, trucks, as well as other shipping methods. There are specific safety guideline and requirement involving shipments of significant amounts of radioactive material. There has to be specific labels, documentation and placards that has to identify the cargo as radioactive. According to the CDC, “it is very unlikely that a transportation accident involving radiation would result in any radiation-related injuries or illnesses (CDC. Gov 2018).

Dangers of a transportation accident involving radiation

Some of the dangers of a transportation accident which involves radiation include:

- Contact with the radioactive material.
- Exposure to the radioactive material.

The CDC states that the emergency officials have plans in place to safely respond to transportation accidents which involves radioactive material (CDC.gov 2018).

Protect yourself and others

Always immediately report any transportation accidents which involves radiation to emergency responders.

Avoid touching any cargo from the transport container.

Stay away from the site of the accident; as far away as possible.

The CDC states that if you believe that you have been exposed to radioactive material, it is important to listen for instructions from emergency officials and to contact your physician / Healthcare provider (CDC.gov 2018).

Occupational Accidents

Many workplaces use radiation sources. Accidents can happen when the radiation source is improperly used or if the safety controls experience malfunctions or failures.

Radiation sources can be found in various settings for example,

Health care facilities,

Research institutions,

Manufacturing operations.

The Health Effects

The health effects from an occupational accident which involves radiation may range from no health effects experienced to very serious health effects. This will be based on several factors, such as:

The type of radioactive material

The amount of radioactive material

The length of time the individuals were close to the radioactive material

How long the radioactive material was in the body

How long the radioactive material was on the body

The part of the body that was exposed to the radioactive material.

How close the individuals were to the radioactive material.

Protecting yourself and others

It is recommended that if you work in an occupation that uses radiation sources, make sure that you become be familiar with safety precautions, policies, procedures and complete the required radiation safety trainings. Immediately report all occupational accidents which involves radiation to safety officials and stay far away from the site of the accident as possible.

The CDC continues to educate the public that if you believe you have been exposed, listen for instructions from safety officials and contact your physician / Healthcare provider (CDC.gov 2018).

Food & Water Safety After a Disaster

Resources

Keep Food and Water Safe Before, During and After a Disaster or Emergency.

Click on links below:

Food Safety for Power Outages

Keep Food Safe After a Disaster or Emergency

Pandemic Influenza (Flu)

Pandemic Influenza (Flu)

According to the CDC, an" influenza pandemic is a global outbreak of a new influenza A virus. Pandemics happen when new (novel) influenza A viruses emerge which are able to infect people easily and spread from person to person in an efficient and sustained way. Because the virus is new to humans, very few people will have immunity against the pandemic virus, and a vaccine might not be widely available. The new virus will make a lot of people sick. How sick people get will depend on the characteristics of the virus, whether or not people have any immunity to that virus, and the health and age of the person being infected (CDC.gov 2019). "

Preparedness

It is very important to prepare and plan for a pandemic to ensure an effective response. Planning for a pandemic and effectively responding can be a very complex process and pandemics can affect everyone in a community.

According to the CDC, “public health officials, health care professionals, researchers and scientists in the United States and across the world are working together to plan and prepare for possible pandemics. Many resources are available to help international, national, state and local governments, public health and health care professionals, corporations, and communities develop pandemic preparedness plans and strengthen their capabilities to respond to different pandemic scenarios” (CDC.gov 2019).

What the CDC Does

CDC VIDEO RESOURCE – Preparing for an influenza pandemic

According to the CDC, the Centers for Disease Control and Prevention programs use scientific expertise and resources to protect the United States from the continuing threat posed by seasonal influenza and pandemic influenza, with the following activities:

Monitoring and assessing influenza viruses and illness.

Building and supporting surveillance and response capacity.

Improving vaccines and other interventions.

Applying research to provide science-based enhancement of prevention and control policies and programs (CDC.gov 2019).

Monitoring for Influenza Viruses

According to the CDC, influenza viruses are constantly changing, and therefore continued vigilance is required to protect the United States and the rest of the world not only from seasonal influenza but also from novel influenza A viruses that could trigger a pandemic. Global influenza surveillance, both epidemiologic and virologic, is the foundation of influenza preparedness and response for influenza viruses (CDC.gov 2019).

This work is conducted through the World Health Organization's Global Influenza Surveillance and Response System (GISRS) which was established in 1952. The GISRS network consists of national influenza centers (NICS) which conduct influenza virus surveillance and study influenza disease trends. There also are a number of designated WHO Collaborating Centers (CCs) that conduct further research and analysis on information and samples gathered by the NICS (CDC.gov 2019).

According to the Centers for Disease Control and Prevention, the CDC's Influenza Division is the U.S. lead for influenza surveillance and has served as a WHO CC for Surveillance, Epidemiology, and Control of Influenza since 1956. It is the largest global resource and reference center supporting public health interventions to control and prevent seasonal and pandemic influenza. Internationally, CDC also plays an important role in helping to establish, maintain and expand influenza surveillance and laboratory capacity in more than 50 countries around the world through the CDC Influenza Division International Program (CDC.gov 2019).

According to the Centers for Disease Control and Prevention, Influenza surveillance in the United States is a collaborative effort with many partners in state, local, and territorial health departments, public health and clinical laboratories, vital statistics offices, health care providers, clinics, and emergency departments. Information in five categories is collected from eight different data sources that allows CDC to:

Find out when and where influenza activity is occurring,

Track influenza-related illness,

Determine what influenza viruses are circulating (including the detection of novel influenza A viruses),

Detect changes in influenza viruses,

Measure the impact influenza is having on hospitalizations and deaths in the United States

Data from global influenza surveillance are used in preparedness and planning for seasonal influenza epidemics and the next influenza pandemic to:

Monitor global trends in influenza viruses (e.g., prevalence, geographic spread and virus evolution),

Quickly detect, report and respond to influenza outbreaks,

Isolate novel influenza A viruses in order to study them, including to:

assess the risk they pose,

develop tests to detect them,

determine whether currently available influenza antiviral drugs would be effective against them, and

take early steps to make vaccines to respond to the next influenza pandemic.

Additionally, these data are used to help formulate policy to enhance preparedness and response capacity (CDC. Gov 2019).

CDC Pandemic Tools

According to the Centers for Disease Control and Prevention, CDC's pandemic influenza preparedness efforts include surveillance of human and animal influenza A viruses, which is ongoing, risk assessments of influenza A viruses with pandemic potential, and the development and improvement of preparedness tools that can assist public health practitioners in the event that there is an influenza pandemic.

The links below will provide more information about influenza pandemics and highlight some of the Centers for Disease Control and Prevention Influenza Division's continued work on influenza pandemic preparedness.

Pandemic Modeling Tools

CDC resources to help hospital administrators and state and local health officials prepare for the next influenza pandemic (CDC.gov 2016):

- CDC Community Flu 2.0
- CDC FluAid 2.0
- CDC FluSurge 2.0
- CDC FluLabSurge 1.0
- CDC FluWorkLoss 1.0

Additional Resources

According to the CDC; Emergency Preparedness & Response:

Prepare Yourself
Tools and resources to help you and your family prepare for any disaster. You will also find information about current hazards and important information on what to do before, during and after public health emergencies.

Community Preparedness
Community Resilience relies on the ability to develop informed, empowered, and resilient health care systems and residents.

Healthcare System Preparedness
Healthcare System Preparedness ensures that there is capacity and capability for provision of critical public health and medical services in order to reduce the potential for adverse health outcomes during any event.

Preparedness Training, Exercise and Evaluation
Ensuring that Florida's public health and health care system along with our supporting partners are properly trained, practice their response roles, perform response duties, and are prepared to respond to any and all hazards.

Environmental Health Preparedness
Leveraging resources through proactive planning and strategic collaboration with a variety of local, state and federal partners to evaluate and prevent potential health risks from chemical, biological, radiological and physical agents in the environment.

Preparedness Planning
Provides for a systematic framework to develop, implement, evaluate, and improve plans across the emergency management cycle.

Disaster Response Resources
Florida's disaster response teams as well as the resources to stay informed and ensure that plans, personnel, equipment, and systems are in place to protect the safety and health of responders.

Radiation Control
Licensing and inspection of facilities that use radioactive materials as well as monitoring Florida's radiological environment.

Information for Disaster Evacuation Centers

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