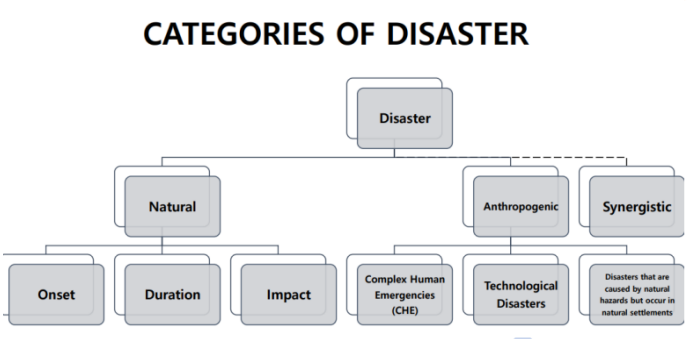
ESSENTIALS OF DISASTER PLANNING

I. DISASTER

- "A **serious disruption** of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: **Human, material, economic, and environmental losses and impacts"** (United Nations International Strategy for Disaster Reduction [UNISDR], 2017)
- It may be viewed as an ecological disruption, or emergency, of a severity and magnitude **that result in deaths, injuries, illness, and property damage that cannot be effectively managed** using routine procedures or resources and that **require outside assistance**

II. CATEGORIES OF DISASTER



Defining an event as a disaster also **depends on the location in which it occurs** particularly the population density of that location

- **Natural -** the **result of an ecological disruption or threat** that exceeds the adjustment capacity of the affected community
  - **Onset**
    - Rapid
    - Slow/Chronic
  - **Duration**
    - Short
    - Prolonged
  - **Impact**
    - Short
    - Prolonged

- **Anthroropogenic -** are those in which the principal direct causes are identifiable human actions, deliberate, or otherwise
  - **Complex Human Emergencies (CHE)**
    - involve situations where populations suffer significant casualties as a result of war, civil strife, or other political conflicts
    - Ex: Rohingyas in Myanmar
  - **Technological Disasters**
    - Large numbers of people, property, community infrastructure, and economic welfare are directly and adversely affected by major industrial accidents, unplanned release of nuclear energy, and fires or explosions from hazardous substances such as fuel, chemicals, or nuclear materials
    - Ex: Chernobyl Disaster in 1986

- **Synergistic -** a natural disaster, or phenomenon, which may trigger a secondary disaster, the result of weaknesses in the human environment
  - commonly reffered as NA-TECH (Natural-Technological Disasters)
  - Ex: Fukushima Daiichi Nuclear Disaster in 2011

III. HEALTH DISASTER

- A **catastrophic event** that results in casualties that **overwhelm the healthcare resources** in that community and may result in a sudden unanticipated surge of patients, a change in standards of care, and a need to allocate scarce resources

A. CATEGORIES OF HEALTH DISASTER

- Internal
  - Becomes a problem for a facility when the consequences of the event create a demand for services that tax or exceed the usual available resources
- External
  - Occurs when there is an event within the facility that poses a threat to disrupt the environment of care

Combined Internal and External classified as:

- **Level 1 -** if the organization, agency, or community is able to **contain the event** and respond immediately
- **Level 2 -** if the disaster required assistance from external sources, but these can be obtained from **nearby agencies**
- **Level 3 -** if the disaster is of a magnitude that exceeds the capacity of the local community or region and requires assistance from **national level**

IV. DECLARATION OF A DISASTER

- In the United States, the **Robert T. Stafford Disaster Relief and Emergency Assistance Act,** passed by Congress in 1988 and amended most recently in August 2016, provides for federal government assistance to state and local governments to help them manage major disasters and emergencies
- Under the **Stafford Act**, a **"major disaster"** means any natural catastrophe (including hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant disaster assistance

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- If the **consequences of a disaster are clear and imminent** and warrant redeployment actions to lessen or avert the intensity of the threat, **a state governor may request assistance even before the disaster has occurred.**

V. GENERAL EFFECTS OF A DISASTER

- Damage to and destruction of property
- Damage to and destruction of production
- Loss of livelihood
- Disruption to essential services
- Damage to national infrastructure
- Disruption to government systems
- National economic loss

VI. HEALTH EFFECTS OF A DISASTER

- In addition to causing illness and injury, disasters disrupt access to primary care, preventive services, and exacerbate underlying psychiatric illness
- **Epidemiology -** the quantitative study of the distributions and determinants of health-related events in human populations
- **Disaster epidemiology -** the measurement of the adverse health effects of natural and human-generated disaster and the factors that contribute to those effects, with the overall objective of assessing the needs of disaster-affected populations, matching available resources to needs, preventing further adverse health effects, evaluating program effectiveness, and planning for contingencies
- Disasters may cause premature deaths, illnesses, and injuries in the affected community
- Disasters may destroy the local healthcare infrastructure
- Disruption of routine healthcare services and prevention initiatives may lead to long-term consequences in health outcomes in terms of increased morbidity and mortality
- Disasters may create environmental imbalances
- Disasters may affect the psychological, emotional, and social well-being of the population in the affected community
- Disasters may cause shortages of food and cause severe nutritional deficiencies
- Disaster may cause large population movements (refugees) creating a burden on other healthcare systems and communities

VII. DISASTER CONTINUUM

- Refers to the life cycle of a disaster
- Characterized by 3 major phases
  - Pre-impact - Impact - Post-impact
- Specific actions taken during these three phases, along with the nature and scope of the planning, will affect the extent of the illness, injury, and death that occurs

VIII. DISASTER PLANNING

- **Effective disaster planning addresses the problems posed by various potential events,** ranging in scale from mass casualty incidents, such as motor vehicle collisions with multiple victims, to extensive flooding or earthquake damage, to armed conflicts and acts of terrorism
- The **disaster-planning continuum** is broad in scope and must address collaboration across agencies and organizations, advance preparations, as well as needs assessments, event management, and recovery efforts
- Although public attention frequently focuses on medical casualties, **it is imperative to consider numerous other factors** when disaster plans and responses are being designed and developed
- **Completion** of the disaster planning process **should result** in the production of a comprehensive disaster or **"emergency operations plan"**

A. TYPES OF DISASTER PLANNING

- **Agent-Specific Approach** - focuses preparedness activities on the most likely threats to occur based on their geographic location
- **All-Hazards Approach -** a conceptual model for disaster preparedness that incorporates disaster management components that are consistent across all major types of disaster events to maximize resources, expenditures, and planning efforts

IX. COMMON CHALLENGES DURING DISASTERS

- Communication problems
- Triage, transportation, and evacuation problems
- Leadership issues
- the management, security of, and distribution of resources at the disaster site
- advance warning systems and the effectiveness of warning massages
- Coordination of search and rescue efforts
- Media issues
- Effective triage of patients (prioritization for care and transport of patients)
- Distribution of patients to hospitals in an equitable fashion
- Patient identification and tracking
- Damage or destruction of the healthcare infrastructure
- Management of volunteers, donations, and other large numbers of resources
- Organized improvisational response to the disruption of major systems
- Encountering overall resistance (apathy) to planning efforts

X. SIX DOMAINS OF PREPAREDNESS

- Community Resilience
  - Preparing for and recovering from emergencies
- Information Management
  - Making sure people have information to take action
- Incident Management
  - Coordinating an effective response
- Countermeasures and Mitigation
  - Getting medicines and supplies where they are needed
- Surge Management
  - Expanding medical services to handle large events
    - Disaster-medical aid-centers
- Biosurveillance
  - Investigating and identifying health threats

XI. CORNERSTONE METHODS OF DATA COLLECTION

- Hazard Identification and Planning
- Vulnerability Analysis
- Risk Assessment

A. HAZARD IDENTIFICATION

- **Hazards** are situations or items that create danger and the potential for a disaster to occur
- **Hazard identification** is used to determine which events are most likely to affect a community and to make decisions about who or what to protect as the

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basis of establishing measures for prevention, mitigation, and response
- How to identify hazards
    - Data are then mapped using aerial photography, satellite imagery, remote sensing, and geographic information systems

1. HAZARD ANALYSIS

NATURAL EVENTS	
• Drought • Wildfire (ex: Forest, range) • Avalanche • Winter storm/blizzard; snow, ice, hail • Tsunami • Hurricane/ windstorm/ typhoon/ cyclone • Lightning storm	• Biological event • Heat wave • extreme cold • Flood or wind-driven water • Earthquake • Volcanic eruption • Tornado • Landslide or mudslide • Dust storm or sandstorm
TECHNOLOGICAL EVENTS • Hazardous material release • Explosion or fire • Transportation accident (rail, subway, bridge, airplane) • Building or structure collapse • Power or utility failure • Extreme air pollution	**HUMAN EVENTS** • Economic failures • General strikes • Terrorism • Sabotage, bombs • Hostage situation • Civil unrest • Enemy attack • Arson • Mass hysteria/ Panic **SPECIAL EVENTS** • Mass gatherings, concerts, sporting events, political gatherings **CONTEXT HAZARDS** • Climate change • Sea level rise

B. VULNERABILITY ANALYSIS

- **Vulnerability** is the “state of being vulnerable— open to attack, hurt, or injury”
- **Vulnerability analysis** can provide predictions of what individuals or groups of individuals are most likely to be affected, what property is most likely to sustain damage or be destroyed, and what resources will be available to mitigate the effects of the disaster
- Vulnerability analysis should be conducted for each hazard that is identified

C. RISK ASSESSMENT

- It is an essential feature of disaster planning and is, in essence, a calculation or model of risk, in which a comprehensive inventory is created, including all existing and potential dangers, the population most likely to be affected by each danger, and a prediction of the health consequences
- Risk assessment necessitates the cooperation of corporate, governmental, and community groups to produce a comprehensive listing of all potential hazards

2. HAZARD ANALYSIS

The following disaster-prevention measures can be implemented following the analysis of hazards, vulnerability, and risk:

- Prevention or removal of hazard
- Containment of the hazard or implementation of mitigation strategies
- Removal of at-risk populations from the hazard
- Provision of public information and education
- Establishment of early warning systems
- Mitigation of vulnerabilities
- Reduction of risk posed by some hazards
- Enhancement of a local community’s capacity to respond

* Regardless of the type of approach used by planners, all hazards and potential dangers should be identified before an effective disaster response can be planned

XII. EVALUATING CAPACITY TO RESPOND

- Resource identification is an essential feature of disaster planning
- A community’s capacity to withstand a disaster is directly related to the type and scope of resources available, the presence of adequate communication systems, the structural integrity of its buildings and utilities, and the size and sophistication of its healthcare system
- Disaster preparedness includes assembling lists of healthcare facilities; medical, nursing, and emergency responders groups; public works and other civic departments; and volunteer agencies, along with phone numbers and key contact personnel for each
- **Redundant communication system** must be put in place so that hospitals, health departments, and other agencies, both locally and regionally, can effectively communicate with each other and share information about patients in the event of a disaster
- Within hospitals, departments should have a readily available, **complete record of all personnel, including cellular phone numbers** to ensure access 24 hours a day
- Disaster plans must also include alternative treatment sites in the event of damage to existing healthcare facilities or in order to expand the surge capacity of the present healthcare system
- **Coordination between agencies** is also necessary to avoid chaos if multiple spontaneous volunteers respond to the disaster an are not directed and adequately supervised

XIII. CORE PREPAREDNESS ACTIVITIES

- Prepare a **theoretical foundation** for disaster planning
    - Realistic predictions of population behaviors accompanied by disaster plans that are flexible in design and easy to change will be of greater value to all personnel involved in a disaster response
- Disaster planning is **only as effective as the assumptions** upon which it is based
    - Sound disaster preparedness includes a comprehensive review of the existing disaster preparedness literature
- Core preparedness activities must **go beyond the routine**
    - Disasters differ from routine daily emergencies, and they pose significant problems that have no counterpart in routine emergency responses
- Have a **community needs assessment**
    - A community needs assessment must be conducted and routinely updated to identify the preexisting prevalence of disease and to identify those high-risk, high-need patients who may require transport in the event of an evacuation or whose condition may necessitate the provision of care in nontraditional sites
- Identify **leadership and command post**
    - ICS is the mandated leadership form for leading an emergency response
    - Identification of the command post must also be decided in advance and communicated to all members of the organization or community
- Design a **local response** for the first 72 hours

- Identify and accommodate **vulnerable populations**
- Know about **state and federal assistance**
- Identify **training and educational needs, resources, and personal protective equipment (PPE)**
- Plan for the early conduction of **damage assessment**
    - Disaster assessment provides managers with objective information about the effects of the disaster on a community and can be used to match available resources to the population's needs. The early completion of this task and the subsequent mobilization of resources to areas of greatest need can significantly reduce the adverse effects of a disaster

XIV. EVALUATION OF DISASTER PLAN

- An essential step in disaster planning and preparedness is the evaluation of the disaster response plan for its effectiveness and completeness by key personnel involved in the response
- The comprehension of people expected to execute the plan and their ability to perform duties must be assessed
- The availability and functioning of any equipment called for by the disaster plan needs to be evaluated and reviewed on a systematic basis
- Several methods may be used to exercise the disaster plan, the most comprehensive of which would be its full implementation in an actual disaster

XV. PROFESSIONAL NURSING MANDATE

- According to the ANA, "the aim of nursing actions is to assist patients, families, and communities to improve, correct, or adjust to physical, emotional, psychosocial, spiritual, cultural, and environmental conditions for which they seek help
- **All nurses should have an awareness of the basic life cycle of disasters,** the distinct patterns of illness and injury associated with the major events, and a framework to support the necessary assessment and response efforts

I. DISASTER/ OUT-OF HOSPITAL TRIAGE SYSTEM

- Simple Triage and Rapid Treatment System (START)
- JumpSTART system

A. START TRIAGE

- A common algorithm that is used with adult pre-hospital triage
- Developed by Newport Beach California, Fire and Marine Department and Hoag Hospital
- It is based on the person's ability to respond verbally and ambulate and their respirations, perfusion, and mental status (RPM). The system works as follows

Red	Priority 1 – seriously injured, life threatening but salvageable if treated promptly Do not Delay! Taken to Collection point first.
Yellow	Priority 2 – seriously injured but not immediately life threatening, treatment may be delayed for a limited period
Green	Priority 3 – minor injuries, treatment can be delayed immediately
Black	Priority 0 – dead or so severely injured that survival is unlikely with available resources. Will be reviewed as and when resources are available.

- Plan is based on 3 observations:
  - Respiration (R) – 30 seconds
  - Perfusion (P) – 2 seconds
    - Blanch Test / Capillary Refill Test
    - Radial Pulse
  - Mental Status (M) – ability to follow command
- The mnemonic "RPM:30-2-can do" is an easy way to remember these decision points.
- **Red tags** are assigned to any victim with the following:
  - Respiratory rate greater than 30
  - Absent radial pulse or cap refill greater than 2 sec
  - Unable to follow simple commands
- **Yellow tags** are then assigned to all others but is unable to walk.
- **Green tags** are reserved for "walking wounded".
- **Black tags** are assigned to any victim who has negative breathing even after opening airway

START Triage
Assess, *Treat, (use bystanders)*
When you have a color
STOP - TAG - MOVE ON

MINOR
-- ***Move Walking Wounded***

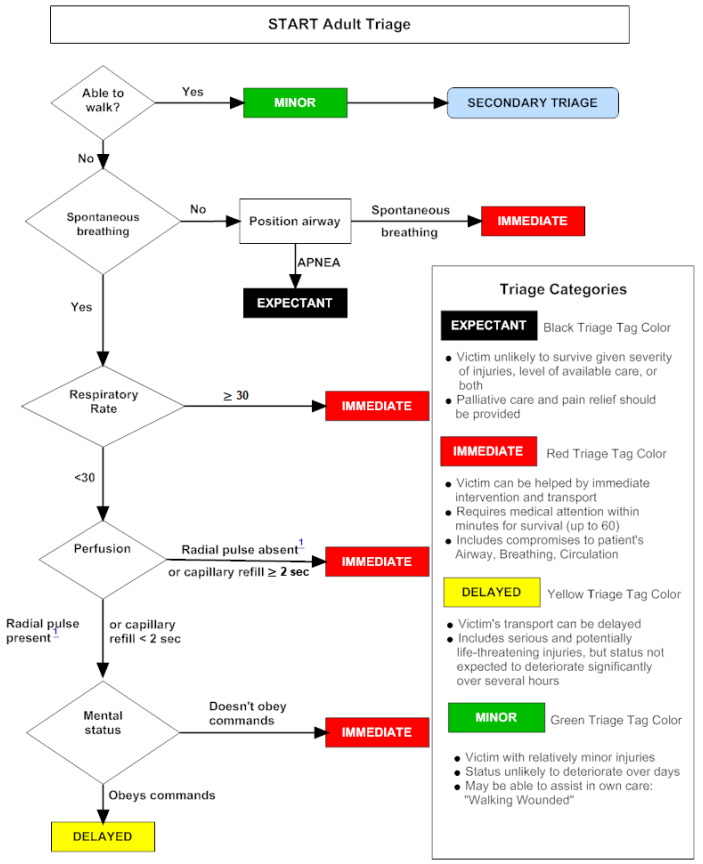
DECEASED
-- No RESPIRATIONS after *head tilt*

IMMEDIATE
-- **Breathing** but UNCONSCIOUS
-- **Respirations** - over 30
-- **Perfusion** Capillary refill > 2 or NO RADIAL PULSE
Control bleeding
-- **Mental Status** Unable to follow simple commands

DELAYED
-- Otherwise

REMEMBER:
Respirations - 30
Perfusion - 2
Mental Status - Can Do

Victim	Type of Injury	Pertinent Info.	Triage Category	Reason
1	**Truck Driver** -- c/o Neck & shoulder pain, elderly, history of cardiac illness	Respirations: Under 30 Pulse (radial): Present Mental Status: Awake & Oriented	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No apparent abnormality
2	**Truck Passenger** -- Upset but no apparent complaints, elderly man	Respirations: Under 30 Pulse (radial): Present Mental Status: Awake & Oriented	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No apparent abnormality
3	**Minibus Driver** -- Blood from ears, facial fracture, skull laceration, unconscious	Respirations: Under 30 Pulse (radial): None Mental Status: Unconscious	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No pulse Unconscious
4	**Minibus Passenger** -- Major skull fracture with eye socket hanging out	Resp: None after head tilt Pulse (radial): None Mental Status: Unconscious	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No respi No pulse Unconscious
5	**Minibus Passenger** -- in back seat with seat belt on, answers questions but whimpers	Respirations: Under 30 Pulse (radial): Present Mental Status: Awake & Oriented	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No apparent abnormality
6	**Minibus Passenger** -- restrained , crying & whimpering	Respirations: Under 30 Pulse (radial): Present Mental Status: Awake & Oriented	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No apparent abnormality
7	**Adult Male # 1** -- Curbside, shook up, grabbing neck	Respirations: Under 30 Pulse (radial): Present Mental Status: Awake & Oriented	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No apparent abnormality
8	**Adult Female # 2** -- Curbside. No apparent complaints Able to walk	Respirations: Under 30 Pulse (radial): Present Mental Status: Awake & Oriented	○ Immediate ○ Delayed ○ Minor ○ Dead/ Dying	No apparent complaints



- 34 year old adult hit by the front bumper of the car and thrown into woods (hidden from view) Unable to walkpatient is dazed and confused, and has several leg deformities (both feet have weak pulses) Unable to breathpatient has severe facial trauma and is gurgling and gasping. Breathing returns with airway opening. RED
- An unresponsive male patient has snoring respirations. His breathing improves when you open his airway. RED
- A 66-year old male patient is sitting on the ground. His
- eyes are open, but he cant answer or follow directions. YELLOW
- A responsive 34 year old female has pale, moist skin and
- respirations of 32/min. RED

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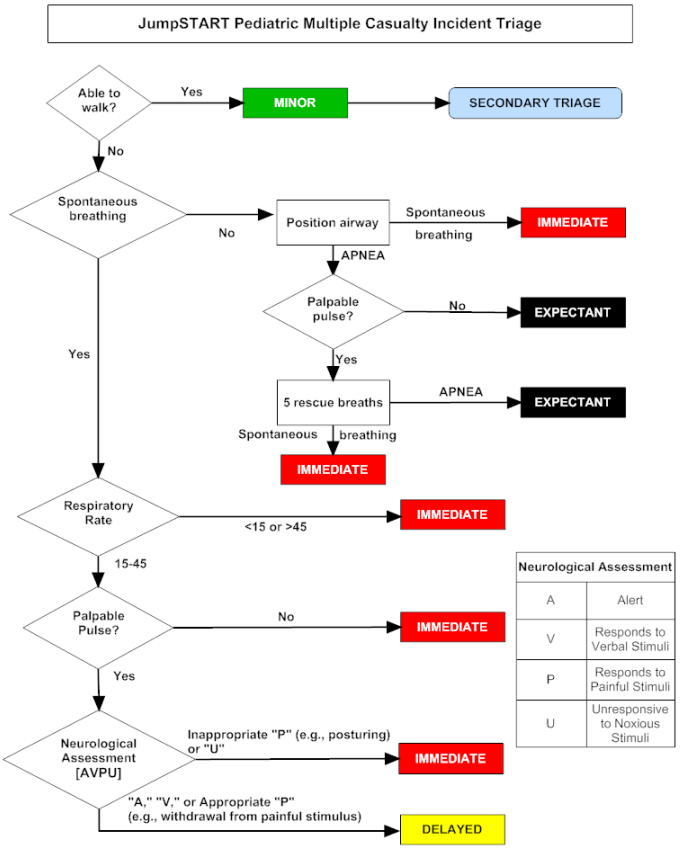
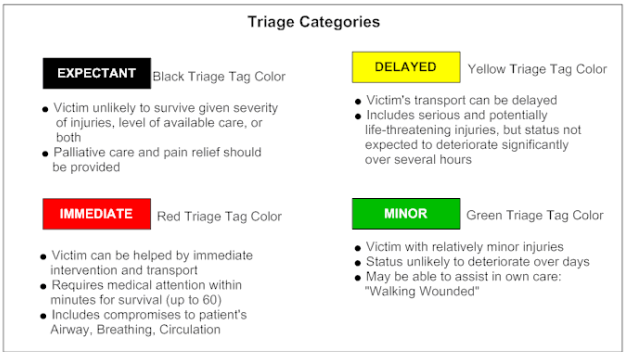
B. JumpSTART TRIAGE

- JumpSTART is a modification to the START system and takes into account the difference in “normal” respiratory rates for children.
- This tool acts to assess pediatric patients better. The age cutoff for use is eight years old.
- The differences in this algorithm include:
    - Five rescue breaths are to be given to apneic children with a pulse; then they are given a black tag
    - Normal RR are not less than 15 or more than 45
    - Neurological assessment is done using the mnemonic AVPU (alert, responds to verbal stimuli, responds to painful stimuli, and unresponsive). Any patient who has abnormal posturing to painful stimuli or is unresponsive gets a red tag designation
- 4 year old hit by front bumper of the car and then dragged under car Unable to walk- patient is unconscious. Not breathing No return of spontaneous respiration with airway opening. Positive palpable pulse- a faint carotid pulse is felt After 15 sec. of RB there is NO return of spontaneous respirations. BLACK



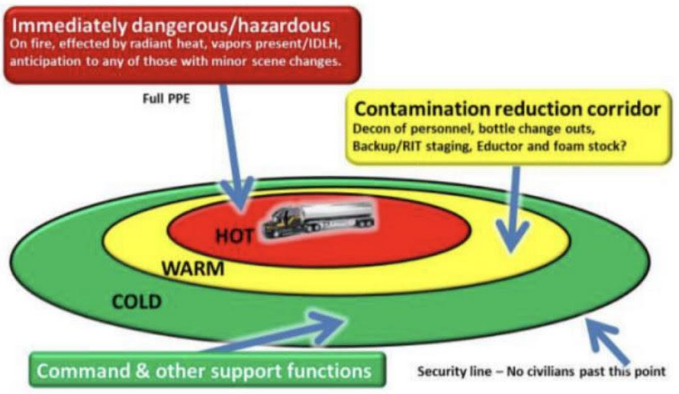
Use JumpSTART if the Patient appears to be a child.

Use an adult system, such as START, if the patient appears to be a young adult.

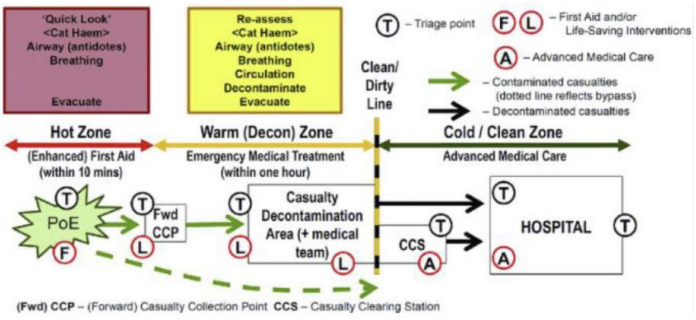


II. DISASTER TRIAGE FOR CHEMICAL AND HAZARDOUS MATERIAL DISASTERS

- Triage for chemical incidents will occur in several places: (1) In the field and (2) In the Hospital Setting
- In the field
    - Hot Zone- this is the area immediately adjacent to the location of the incident.
    - Warm Zone- this is the distance of at least 300 feet from the outer perimeter of the hot zone and is upwind and uphill from the contaminated area.
    - Cold Zone- this area is adjacent (and uphill and upwind) to the warm zone and is where decontaminated victims enter.



- In the Hospital
    - Warm Zone- this is an area that is adjacent to the hospital (usually the emergency department), which has a source of water.
        - In the hospital setting, the triage station is at the entrance to the warm zone decontamination area
    - Clean Zone- this is the treatment area inside of the emergency department or hospital where newly arriving patients and victims are sent after having been triaged and decontaminated.
        - Another more thorough triage is performed in the clean zone area



I. STANDARD FIRST AID

A. EMERGENCY ACTION PRINCIPLE

- Steps in First Aid:
  - Scene Size-up
  - Activate Medical Assistance
  - Primary Assessment
  - Secondary Assessment

1. SCENE SIZE-UP

- Scene Safety
  - Don't engage if it is unsafe.
  - Secure the scene.
- Know What Happened
  - Mechanism of injury
  - Nature of illness
- Protect Yourself/Well-Being
  - Use Personal Protective Equipment (PPE) to prevent possible transmission of diseases.
- Number of Casualty

2. ACTIVATE MEDICAL ASSISTANCE

- Call for help:
  - National Emergency Hotline 911
  - Local Emergency Hotline of your Municipality

CALL FIRST	CARE FIRST
• Adults and Adolescents • Witnessed collapse of children and infants	• Adults and Adolescents with likely asphyxial arrest (e.g. drowning) • Unwitnessed collapse of children and infants
• If you are ALONE with no mobile phone, leave the victim to activate emergency response system and get AED/emergency equipment before beginning CPR • Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available	• Give 2 minutes (5 cycles) of CPR • Leave the victim to activate emergency response system and get the AED • Return to the child or infant and resume CPR; use the AED as soon as it is available

3. PRIMARY ASSESSMENT

- Goal: To identify and initiate treatment of immediate or potential life threats.
  - Responsiveness
  - Airway
  - Breathing
  - Circulation
  - Disability
  - Exposure

RESPONSIVENESS	AIRWAY
• Awake/Alert • Verbal, responsive to verbal stimuli • Pain, responsive to pain stimuli • Unresponsive	• Able to speak / cry = open airway • Note quality of speaking / crying • Open the airway
BREATHING • Check for signs of breathing (within 10 seconds!) • See the chest rise and fall	**CIRCULATION** • Skin color: reddish? whitish? bluish? • Skin temp: cold? clammy? hot? sweaty? very dry? • Pulse – For responsive victim, check for peripheral pulses
DISABILITY • Measured by patient's LOC • Glasgow Coma Scale (AVPU) • Pupillary Reaction	**EXPOSURE** • Environmental Control • Once the patient is exposed, it is important to limit heat loss, prevent hypothermia, and maintain privacy by using warming blankets, overhead warmers, and warmed IV fluids.

4. SECONDARY ASSESSMENT

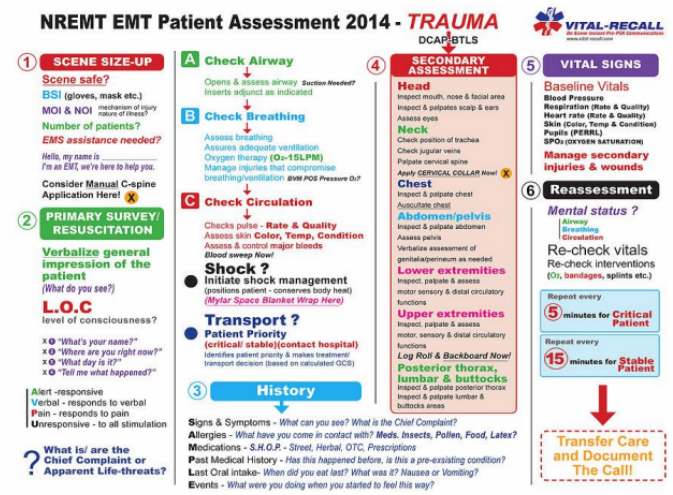
- Thorough assessment of victim's condition.
  - History Taking
  - Physical Examination

HISTORY TAKING

- Interview the victim/relative/bystander:
  - Chief Complaint
    - SAMPLE
  - Pain Assessment
    - OPQRST
  - Other important information

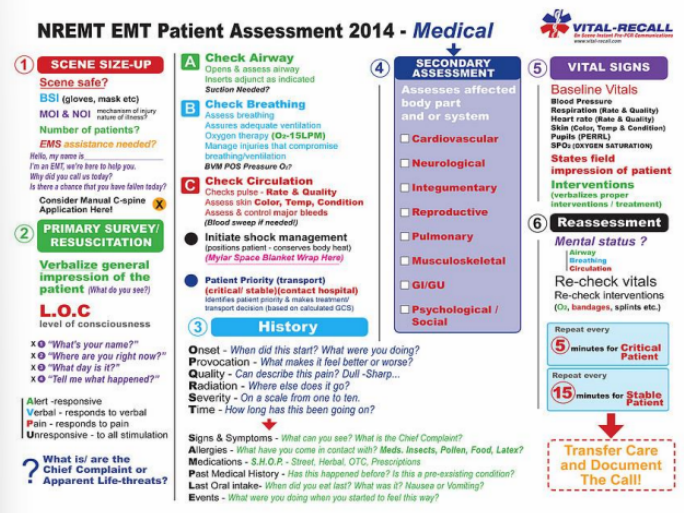
PHYSICAL EXAMINATION

- Identify specific signs of illness or injuries
  - Head and neck
  - Shoulders, chest and back
  - Arms and hands
  - Abdomen
  - Hips
  - Legs and feet



B. TYPES OF WOUNDS

- **Incision**
  - A clean, straight cut caused by a sharp edge (i.e. a knife).
- **Laceration**
  - A messy looking wound caused by a tearing or crushing force.
- **Abrasion**
  - A wound caused by a scraping force or friction
- **Puncture**
  - A deep wound caused by a sharp, stabbing object (i.e. a nail). May appear small from the outside but may damage deep tissues.
- **Avulsion**
  - A wound caused by a tearing force in which tissue is torn away from its normal position.
- **Amputation**
  - The loss of a distinct body part such as a limb, finger, toe or ear.



C. HEAD AND NECK PROBLEMS

DIZZINESS

- Feeling of unsteadiness; spinning sensation
- Vertigo: feeling of motion when there is no actual motion
- Lightheadedness: feeling of about to faint
- What to do for Dizziness
  - Drink plenty of water; have regular meals; get enough rest
  - Avoid unnecessary or sudden movements or change in position
  - Place the victim in a comfortable position
  - Reassure the anxious dizzy person
  - If symptoms persist, bring the victim to the nearest medical facility
- When to seek medical care
  - Dizziness without a clear, certain cause
  - Dizziness followed by loss of consciousness
  - Inability to walk straight; falling
  - Worsening or new symptom

FAINTING

- Not enough blood supply to the brain which causes loss of consciousness
- What to do for Fainting
  - If person is breathing, lay him down, elevate legs
  - Loosen constrictive clothing
  - Don't get the person up too quickly
  - Seek for medical assistance
  - Make sure airway is clear; watch out for vomiting
  - Treat injuries from fall, if any
  - DO NOT pour water over victim's face
  - DO NOT give any liquids unless victim is awake

SEIZURES

- Seizures
- Uncontrolled, rapid shaking
- Muscles contract and relax repeatedly
- Characteristics of Seizures
  - With or without warning signs
  - Rigid; shaking vigorously, uncontrollably with upward rolling of eyes; drooling
  - Staring blankly
  - Victim may not remember
- What to do for Seizures
  - Place the person in a safe environment
  - Provide adequate breathing space
  - Support the head and neck
  - Note for duration, recurrence and interval
  - After the convulsion, roll the person to his side
  - Call for medical assistance
  - Stay with person until help arrives
- What NOT to do for Seizures
  - DO NOT place anything in the mouth
  - DO NOT try to make the person stop convulsing
  - DO NOT give anything by mouth until he/she is fully awake and alert

HEADACHE

- Most common pain complaint
- May indicate an underlying disorder
- What to do for Headache
  - Most headaches are treated with painkillers, as prescribed by doctors
  - Stay in a cool and quiet environment
  - Apply cold compress on painful area
  - Rest
  - Drink plenty of water
  - Avoid stressors
- When to seek medical help
  - If headache persists
  - Headache with stiff neck, vomiting
  - Headache with numbness and weakness of arms or legs and difficulty speaking
  - Headache after head injury
  - With difficulty of breathing

NOSEBLEED

- Bleeding from the nose
- Common Causes of Nosebleeding
  - Injury / trauma
  - Disease / medical conditions
  - Extremes in environmental temperature
  - Changes in altitude
- What to do for Nosebleed
  - Calm the victim; have him sit with head lean forward
  - Pinch victim's nose; have him breathe through mouth

- Apply ice pack on nose bridge, forehead
- Don't let victim rub, blow or pick nose after bleeding stops
- Persistent bleeding: bring victim to hospital

FOREIGN OBJECT IN NOSE (COMMON IN CHILDREN)

- May be inhaled or obstruct the air flow
- May be present in child's nose without any adult being aware
- May dislodge into the mouth and might be swallowed
- Symptoms:
  - Difficulty breathing in affected nostril
  - Feeling of something inside nose
  - Irritation, pain
  - Foul-smelling or bloody nasal discharge
- What to do for Foreign Object in Nose
  - Let the victim inhale through the mouth, pinch the unaffected nostril and ask the victim to gently exhale through the affected nostril with mouth closed.
  - Seek medical help
- What not to do for Foreign object in Nose:
  - DO NOT probe the nose with cotton buds or other tools
  - DO NOT make the victim inhale deeply
  - DO NOT try to remove the object if it is not visible or easily grasped
- Foreign object in ear
  - Common among toddlers
  - Mostly in ear canal
  - Usual Foreign objects in Ear
    - Food material
    - Beads
    - Small toys
    - Corn, seeds
    - Insects
    - Hardened earwax may cause similar symptoms
  - Symptoms
    - Ear pain
    - Decrease in hearing
    - Irritation to ear canal may cause desire to vomit
    - Bleeding
    - Buzzing in the ear
  - Do's and Dont's
    - If an alive insect is in the ear, have the person tilt his head, put a few drops of mineral oil.
    - Seek medical help
    - DO NOT poke into the ear
    - DO NOT try to remove the object

EYE INJURIES

- Include cuts, scratches, objects, burns, chemical exposure, and blunt injuries to the eye or eyelid
- Can lead to vision loss if left untreated
- What to do with objects in the eye:
  - Often clear itself of tiny objects through blinking and tearing
  - Do not rub the eye
  - Try to gently flush it out with water
  - Do not touch it or apply any pressure to it
  - Cover both eyes with clean cloth and bring to the nearest hospital
- Get medical help immediately
- What to do for a person with eye injury due to chemicals:
  - Flush the injured eye with tap water immediately.
  - Turn the person's head so the injured eye is down and to the side. Hold the eyelid open, allow running water for 15 minutes.
  - If both eyes are affected, or if the chemicals are on other parts of the body, have the person take a shower.
  - After following the above instructions, seek medical help immediately
- What to do for a person with eye cuts, scratches or blows
  - If the eyeball has been injured, get medical help immediately
  - Gently apply cold compresses to reduce swelling and help stop any bleeding. DO NOT apply pressure to control bleeding
  - If blood is pooling in the eye, cover both of the person's eyes with a clean cloth or sterile dressing, and get medical help
- When to seek medical help
  - Scratch, cut, or something has penetrated the eyeball
  - Chemical gets into the eye
  - The eye is painful and red
  - Nausea or headache occur with the eye pain
  - Change in vision (such as blurred or double vision)
  - Uncontrollable bleeding

D. ANIMAL BITES AND STINGS

LAND ANIMAL BITES

- Causes direct damage to skin and soft tissues
  - causes infections
  - tetanus
  - rabies
- What To Do
  - Wash bitten area with soap and water
  - DO NOT induce bleeding
  - Control bleeding
  - Cover wound with sterile or clean dressing
  - Bring victim to the nearest health care facility / Animal Bite Treatment Center

1. SNAKE BITE

SNAKE		
	VENOMOUS	**NON-VENOMOUS**
Example	Cobra	Python
Movement	Concertina, wide-winding	Semi-concertina, curving
Shape of head	Semi-triangular	Oblong
Body girth	Rectangular	CIrcular
Skin	Rough	Smooth
Shape of pupil	Vertical, slit-like	Round
Manner of attack	Non-constrictor	Constrictor

Bite mark	Fang marks: 2 punctures	U-shaped row
Anal plate	Double row of sub-caudal plates	Single row of sub-caudal plates
SIGNS AND SYMPTOMS		
Arms	**Eyes**	**GI system**
• Bleeding from wound • Bursing of the skin • Excessive sweating • Fang marks	• Blurred vision • Dizziness • Fever • Severe headache • Drowsiness • Fainting	• Convulsions • Diarrhea • Increased thirst • Nausea • Vomiting

- What To Do
  - Clean the area of the bite with soap and water
  - Apply pressure immobilization bandage with splint on the bitten limb.
  - Make the victim lie down quietly and comfortably
  - Keep victim calm; do not allow unnecessary movements
  - Bring victim to the nearest health care facility/ Poison Control Centers immediately.
  - For other parts of the body affected, wash wounds, do wound care and minimize movement.
- What NotTo Do
  - DO NOT suck the wound to remove the venom
  - DO NOT apply cold compress
  - DO NOT incise the bitten area
  - Do NOT use tourniquet

2. INSECT BITES AND STINGS

- causes pain, swelling, allergic reaction
- can lead to serious illness or death
- Signs & Symptoms
  - stinger present
  - pain
  - swelling
  - itchiness
  - rash
  - redness
  - hives or wheal
  - allergic reaction
- What To Do
  - DO NOT pinch the stinger
  - Remove stinger by gently scraping the skin
  - Wash wound with soap and water
  - Cover the wound
  - Apply cold compress
  - Watch for signs of allergic reaction

3. SPIDER BITES AND SCORPION STINGS

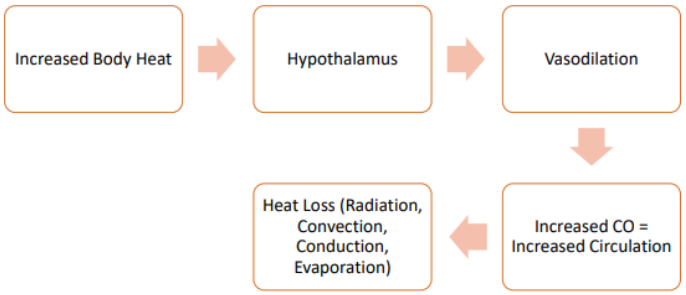
- causes pain, swelling, allergic reaction, infection
- can cause paralysis and death
- Signs and symptoms:
  - Bite mark or sting present
  - Pain
  - Swelling
  - Desire to vomit, with or without vomiting
  - Difficult of breathing or swallowing
- What To Do
  - Wash wound with soap and water
  - Apply antiseptic, as available
  - Apply cold compress
  - Bring victim to the nearest health care facility/ Poison Control Centers immediately

4. MARINE LIFE STINGS

- common marine animals causing injuries
- very painful wounds
- may cause severe allergic reaction
- Signs & Symptoms
  - strong, sharp, stinging, radiating pain
  - skin redness, rash, blisters
  - bleeding (stingray sting)
  - Burning sensation
  - itching, skin irritation
  - desire to vomit, vomiting, numbness, muscle spasm, headache
  - severe reactions: paralysis, coma
- Jellyfish Stings: What To Do and What Not To Do
  - Remove victim's clothing
  - Rinse affected area with vinegar as soon as possible for 30 seconds.
  - Pain should be treated with hot water immersion (as tolerated) when possible.
  - Use seawater in washing the injury to dilute the toxin.
  - Monitor victim's condition
  - Bring victim to hospital
  - Remove, but DO NOT touch the tentacles
  - DO NOT rub the affected area
  - DO NOT apply pressure
- Stingray / Sea Urchin Stings: What To Do and Not What To Do
  - Irrigate / immerse affected area with hot water
  - Cover the wound
  - Bring victim to the nearest health care facility or Poison Control
  - Centers immediately

E. ENVIRONMENTAL EMERGENCIES

- Water makes up approximately 60% of your total body composition.
- Sweat is made up of water and electrolytes such as sodium, chloride, and potassium.
- During high-intensity exercise, a person can lose up to 2.0 liters of water per hour!
- How the body keeps warm?
  - Heat is generated in tissues by:
    - Conversion of food to energy in the body cells
    - Muscle activity either voluntary or involuntary
  - Heat is absorbed



- There are four processes by which the body rids itself of excess heat:
  - Conduction
  - Convection
  - Radiation
  - Evaporation

HEAT-RELATED EMERGENICES

- Heat Cramps
- Heat Exhaustion
- Heat Stroke

1. HEAT CRAMPS

- Earliest sign of heat illness
- Usually involve muscles that are fatigued by heavy work, such as calves, thighs, and shoulders.
- **Signs and Symptoms:**
  - Severe muscle cramps
  - Exhaustion
  - Dizziness or Period of Faintness
- **Emergency Care Procedures:**
  - Primary Goal: Reduce the body high temperature
  - IV Access for fluid administration
  - Cooling Method
  - Monitor VS and LOC
  - Additional Supportive Care: Anti-seizure Medication,
  - Potassium for Hypokalemia

5. HEAT EXHAUSTION

- Prolonged exposure to heat over hours or days leads to heat exhaustion.
- This occurs when thermoregulatory mechanisms such as sweating, vasodilation, and increased respirations cannot compensate for exposure to increased ambient temperatures.
- **Clinical syndrome** characterized by:
  - Fatigue
  - Light-headedness
  - Nausea/vomiting
  - Profuse diaphoresis
  - Feelings of impending doom
  - Tachypnea
- **Emergency Care Procedure:**
  - Place patient in cool area and remove constrictive clothing.
  - Place moist sheet over patient to decrease core temperature.
  - Provide oral fluid, if awake.
  - Replace electrolytes.
  - Initiate normal saline IV solution if oral solutions are not tolerated.
  - For unresolved symptoms, bring victim to nearest health care facility
- Elderly have decreased ability to perspire, less subcutaneous tissue, as well as decreased ability to vasodilate, decreased thirst mechanism, diminished ability to concentrate urine, may not drink enough water
- Tend to keep windows closed

6. HEAT STROKE

- A condition caused by your body overheating, usually as a result of prolonged exposure to or physical exertion in high temperatures. This is the most serious form of heat injury.
- Vasodilation, increased sweating, and respiratory rate deplete fluids and electrolytes, specifically sodium

HEAT STROKE	HEAT EXHAUSTION
Dry, hot skin	Moist clammy skin
Very high body temperature	Normal or subnormal temperature

- Emergency Care Procedure:
  - Treatment: stabilize patient's ABCs and rapidly reduce temperature
  - Cooling methods
  - Minimize/Avoid Shivering
  - Aggressive temperature reduction until core temperature reaches 102º F (38.9º C)
  - Monitor for signs of rhabdomyolysis, myoglobinuria, and disseminated intravascular coagulation

LOCAL COLD INJURY

- Frostbite
- Hypothermia

1. FROSTBITE

- **1st Degree Frostbite**
  - Also known as frostnip
  - Superficial and surface skin damage that is usually not permanent.
  - Patient is unaware unless he sees it.
  - S/S: Skin will turn red and feel cold to the touch. If you stay in the cold, it may begin to feel numb or have a prickling sensation. In the weeks after injury, the skin's surface may slough off.
  - Tx: Preventing Further exposure and Rewarming
- **2nd Degree Frostbite**
  - Also known as Superficial Frost.
  - During this stage of frostbite, your skin will begin to turn from a reddish color to a paler color. In some cases, it may appear blue. The tissues below your skin are still intact
  - S/S: (+) Blisters and Ice Crystals. In the weeks after injury, this hardened, blistered skin dries, blackens, and peels.
  - Tx: Rewarming, Do not rupture blister, Use soft sterile gauze to separate the frostbitten area.
- **3rd to 4th Degree Frostbite**
  - Deep frostbite
  - the layers of tissue below the skin freeze
  - S/S: blood blisters and "blue-grey discoloration of the skin", Gangrene
  - Tx: If still frozen, leave the extremity frozen, Pad the injured extremity, Rewarm at 38-42 degree, Amputation

2. HYPOTHERMIA

- Core temperature <95º F (<35º C)
- Risk factors
  - Extremes of age
  - Use of Recreational drugs
  - Alcohol
  - Medications
- Core temperature <86º F (30º C) is potentially life threatening.

	Centrigrade	Fahrenheit	Signs and Symptoms
Mild	**34 to 36 C**	93.2 to 96.8 F	Shivering, Lethargy, Confusion, Rational to irrational behavior, Minor heart rate changes
Moderate	**30 to 34 C**	86 to 93.2 F	Rigidity, Bradycardia, bradypnea Metabolic and respiratory acidosis, Hypovolemia Shivering disappears at temperature 86º F (30º C)
Severe	**Below 30 C**	Below 86 F	Bradycardia Asystole Ventricular fibrillation

- Emergency Care Procedures:
  - Manage and maintain ABCs.
  - Correct dehydration and acidosis.
  - Treat cardiac dysrhythmias.
  - Rewarm Patient
- Emergency Care Procedures:
  - Mild hypothermia: Passive or active external rewarming
  - Moderate to severe hypothermia: Active core rewarming
    - Use of heated, humidified oxygen
    - Warmed IV fluids
    - Peritoneal, gastric, or colonic lavage with warmed fluids
- Emergency Care Procedures:
  - Risks of Rewarming:
    - Afterdrop, a further drop in core temperature
    - Hypotension
    - Dysrhythmias

F. WOUNDS

- Injuries to soft tissue that damages the skin and the structures underlying it
- First aid depends on types of wound:
  - Closed
  - Open

1. CLOSED WOUNDS

- No break on the surface of the skin
- Application of external forces
  - Bruise, contusion
  - Redness
  - Swelling
  - Hematoma
  - Severe bruising = possible internal bleeding
- **First aid:**
  - Cold compress done within 15 (range to 20 mins) every 20 minutes until referred
  - Cold compress done within 15 (range of 10-20 mins) minutes every 2 hours on the first 24 hours, for home remedies
  - Hot compress for 15 minutes 3x a day after 24 hours
  - Keep affected part elevated when possible

2. OPEN WOUNDS

- Abrasion
  - **Clinical Presentations, Signs and Symptoms:**
    - Affects the top layer of the skin
    - Priority: prevent infection
  - First aid intervention:
    - Wash with soap & water
    - Apply mild antiseptic
    - Keep surface exposed
- Laceration
  - Clinical Presentations, Signs and Symptoms:
    - Tear on surface of the skin
    - More severe bleeding
    - Goal: control bleeding
  - First Aid Intervention:
    - Wash with large amounts of clean water
    - Control bleeding by direct pressure using clean dressing
    - For persistent bleeding: apply 2nd dressing over first; use elastic bandage
    - Bring victim to health care facility
- Incision
  - Clinical Presentation, Signs and Symptoms
    - Cut or wound of body tissue caused by sharp edged object or material
    - Synonyms: gash, laceration, rent, rip, slash, slit, tear
  - First Aid Intervention:
    - Wash with large amounts of clean water
    - Control bleeding by direct pressure using clean dressing
    - Persistent bleeding: apply 2nd dressing over first; elastic bandage
    - Bring victim to health care facility
    - First aid intervention for incision will be the same as for laceration
- Puncture
  - Clinical Presentations, Signs and Symptoms:
    - Entry of sharp, pointed object
    - Can cause massive internal bleeding
    - Very painful
  - First Aid Intervention:

        - Wash with large amounts of clean water
        - Apply mild antiseptic
        - Cover the wound
        - Bring victim to health care facility
- Amputation
    - Clinical Presentations, Signs and Symptoms:
        - Total separation of body part or limb
        - Massive bleeding
        - Very painful
    - First Aid Intervention:
        - Control bleeding using pressure dressings
        - Cover detached part with moist dressing, place in clean plastic bag, place in bag with ice
        - Apply tourniquet to minimize or control massive bleeding
        - Bring victim and detached part to health care facility
- Avulsion
    - Clinical Presentations, Signs and Symptoms:
        - Skin and tissues under it torn off from surface
        - Severe bleeding
        - Very painful
    - First Aid Intervention:
        - Wash with large amounts of clean water
        - Pressure dressing
        - Bring victim to health care facility
- Impaled wounds
    - Clinical Presentations, Signs and Symptoms:
        - Foreign object that penetrates the skin and remains embedded in tissue
    - First Aid Intervention
        - Do NOT remove unless causing airway obstruction
    - Control bleeding using pressure dressing around
    - impaled object
        - Stabilize impaled object using bulky soft dressing or bandages (doughnut ring)
        - Protect impaled object from being moved
        - Bring to health care facility immediately
- Evisceration
    - Clinical Presentations, Signs and Symptoms:
        - Severe open wounds in abdominal wall may expose organs → organs protrude out of wound
    - First Aid Intervention:
        - Do NOT touch or push back exposed organs
        - Cover wound with moist, clean dressing
        - Do NOT use dressing material that sticks to exposed organs or that breaks up when wet
        - Bring to health care facility immediately
- Human bite wounds
    - Clinical Presentations, Signs and Symptoms:
        - Caused by the piercing of skin by human teeth
        - Bacteria are usually present and serious infection often follows
        - Also known as: fight bites
    - First Aid Intervention:
        - Thoroughly wash with an antiseptic or soap and water; rinse well
        - Cover wound with moist, clean dressing
        - Bring to health care facility, for advanced intervention
- Other wounds:
    - Crashing injuries
    - Sucking chest wounds
    - Blast injuries
        - First Aid Intervention:
            - Call 911
            - Control bleeding
            - Bring victim to health care facility

G. LIFE THREATENING BLEEDING

- Blood that is spurting out of the wound
- Blood that won't stop coming out of the wound
- Blood that is pooling on the ground
- Clothing that is soaked with blood
- Bandages that are soaked with blood
- Loss of all or part of an arm or leg
- Bleeding in a victim who now confused or unconscious

CONTROLLING BLEEDING

- Body will not tolerate >20% blood loss
    - Adult = 1 L
    - Children = 100-200 mL
- Control bleeding using direct pressure
- If you DON'T have a trauma first aid kit: Apply Direct Pressure on the wound
    - Take any clean cloth (e.g. shirt) and cover the wound.
    - If the wound is large and deep, try to "stuff" the cloth down into the wound.
    - Apply continuous pressure with both hands directly on top of the bleeding wound.
    - Push down as hard as you can.
    - Hold pressure to stop bleeding. Continue pressure until relieved by medical responders.

I. INTRODUCTION TO FIRST AID

A. FIRST AID

- medical attention administered immediately after the injury approach
- First aid is the immediate care given to a person who has been injured or suddenly taken ill. it includes self-help and home care if medical assistance is not available or is delayed (Philippine National Red Cross)

B. ROLES AND RESPONSIBILITIES OF THE FIRST AIDER

- bridge that fills the gap between the victim and the physician
  - if the physician is not around, we have to take place of the services of the physician but not intended to replace the physician, all we need to do is to give a temporary relief
- Ensure safety
- Secure access to the victim
- Determine any threats to patient's life
- Provide needed care for the patient

C. GOAL OF FIRST AID

- Alleviate suffering
  - Help and reduce the suffering
- Prevent further injury or danger
  - Prevent their condition to worsening
- Prolong life
  - Aims to preserve or sustain life also to save form emminent danger

D. CHARACTERISTIC OF A GOOD FIRST AIDER

- Gentle
  - Can handle the patient in a gentle manner
- Resourceful
  - Make the best things at hand
- Observant
  - Notice all signs, aware of what is happening and what might happen
- Tactful
  - Tactful in handling victim with upmost care and in a calm manner
- Respectable
  - Maintain a professional and caring attitude
  - Converse in a respectable manner
- Emphatic

E. HINDRANCES IN GIVING FIRST AID

- Unfavorable surroundings
  - overcrowded places, intoxicated patients, night time, small streets, relocation area
- Presence of crowds
  - Stampede
- Pressure from victim's relatives

F. TRANSMISSION OF DISEASES AND THE FIRST AIDERS

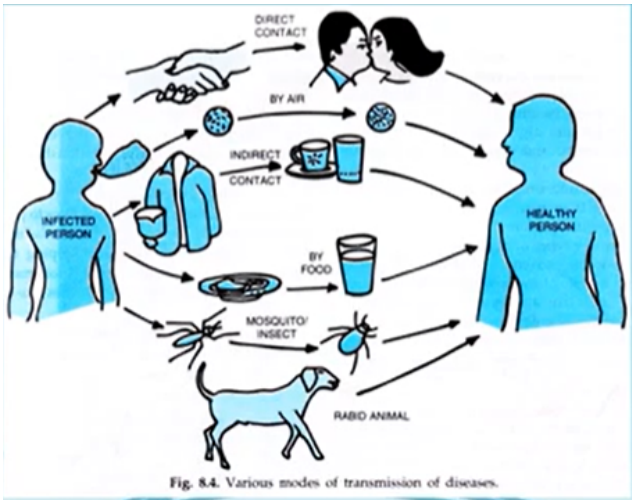


Fig. 8.4. Various modes of transmission of diseases.

- Diseases can be transferred from the patient to the first aider through
  - Direct contact - when a person touches an infected body
    - Mouth-to-mouth
  - Indirect contact
    - When a person touches an infected blood or exposed in any fluids that came from an infected person
  - Airborne
    - when a person inhailed an infected droplet from an infected person (ex: Cough and sneeze)
  - Vector
    - an animal transmits a pathogen into the body thorugh a bit (dogs, mites, mosquito)

G. SAFETY PRECAUTIONS

- Use of PPEs
  - Coveralls
  - Gloves
  - Surgical masks
  - Face shields
  - Goggles
  - N95 masks
- Personal hygiene
- Protective equipment
- Equipment used for cleaning & disinfecting
  - Handwashing
  - Using of alcohol

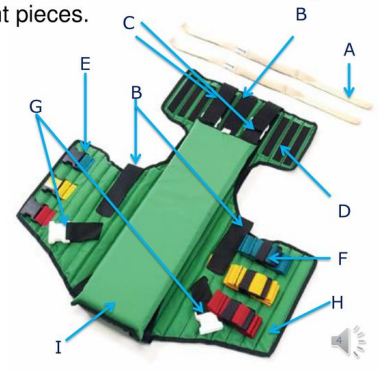
H. FIRST AID EQUIPMENT SUPPLIES

- Spine board
  - spinal immobilization for suspected spinal cord injuries to avoid spinal harm
- Kendric Extraction Device - constructed with 3 torso straps: Top, middle, and lower. The straps are color coded for easy matching of left and right pieces

Components

- The KED is constructed with three torso straps: top, middle and lower. The straps are colour coded for easy matching of left and right pieces.

A- Head Straps
B- Lifting Handles
C- Leg Straps
D- Head Flap
E- Torso Buckles
F- Torso Straps
G- Leg Buckles
H- Torso Flap
I- Adjusta-Pad



STRAP APPLICATION ORDER

- The straps of the KED are secured in a specific order
- "My Baby Looks Hot Tonight" is used
  - M = Middle Straps (Yellow)
  - B = Bottom Straps (Red)
  - L = Leg straps (Black)
  - H = Head straps (White)
  - T = Top straps (Green)

- Splints - generally immobilize joint or limb; and provide temporary relief or remedy for strain, joint, dislocation, fracture, and soft tissue to acute environment
  - Finger splint
  - Wrist splint
  - Arm splint
  - Leg splint
- Rubbing alcohol
- Povidone iodine/ Betadine
- Cottons
- Gauze pads
- Tongue depressor
- Penlight
- Band-aid
  Gloves
- Scissors
- Forcep
- Cloth materials
  - Dressing (Any sterile cloth to cover the wound, control the bleeding, and protect the wound for infection)
  - Bandage (Any cloth — sterile or not, to hold the dressing in place)
    - **Types:** elastic, triangular, roller, plaster, adhesive, ankle, axilla, back, breast, capeline, cohesive, T bandage, demigauntlet
    - **Technique:** Cravat, butterfly, chest, circular, ear, eye, figure of eight, four-tailed, forearm, foot, finger, head, heel, hip

I. HUMAN BODY SYSTEMS

- Circulatory - transports oxygen throughout our body (heart, blood vessels)
- Respiratory - supplies oxygen and removes Carbon Dioxide from the blood (air passage, diaphragm, chest)
- Nervous - transmits impulses (brains, spinal cord, nerve)
- Digestive - absorbs foods and eliminates waste products (Mouth, esophagus, stomach, pancreas, spleen, gall bladder)
- Skeletal
- Urinary - removes waste products (ureters, bladder, kidney) removes BUN and blood urea

II. GUIDELINES IN GIVING EMERGENCY CARE

A. EMERGENCY CARE

- medical attention that is provided in response to a sudden illness and injury

B. WHAT TO CONSIDER

- Planning of action
  - when developing an emergency response, conduct or raise an assessment in the area
    - What will/may happen
    - Who will help
    - What resources are needed
- Gathering of needed materials
  - needed materials for responding
- Remember the initial response
  - **A -** ask for help
  - **I -** intervene
  - **D -** do not do further harm
- Instruction to helpers
  - may be bystanders

C. EMERGENCY ACTION PRINCIPLE

- Survey the scene
  - is the area secure?
    - Evacuate, lockdown
  - What happened?
    - what particular event happened?
    - Bombing, earthquake
  - How many people are injured?
    - to know how many backups are needed
  - Are there bystanders who can help?
  - Identify yourself as a trained first aider
  - To provide care, get consent
- Do a primary survey
  - Check for responsiveness (AVPU scale)
    - **Alertness**
    - **Verbal stimuli**
    - **Painful stimuli** (sternum rub, trapezius squeeze, supraorbital and clavicle pressure),
    - **Unresponsive**
  - Protect spine if necessary
- Activate medical assistance and transport facility
  - Information noted:
    - What happened
    - Location
    - Number of persons injured
    - Extent of injury
    - Person who activated medical assistance
- Secondary Survey
  - Interview the victim
    - Ask victim's name
    - Ask what happened

        - Assess the SAMPLE history
        - Past medical history
        - Allergies, medications
        - Last medication taken
        - What happened prior the incident
    - Check the vital signs
        - Determine the radial or carotid pulse
        - Determine breathing (Respiration rate)
          Determine skin appearance (may have hemorrhage, hematoma)
        - BP
        - Temperature
    - Do head-to-toe examination
        - Deformity
        - Contusion
        - Abrasion
        - Puncture
        - Burn
        - Tenderness
        - Laceration
        - Swelling

Eyes - compare pupils of both eyes - check for bleeding - Constricted pupils - unequal pupils - Dilated pupils = may indicate brain injury **Ears, nose, mouth** - check for fluid or blood in the ears, nose, and mouth - Cerebrospinal fluid may leak (ears) - Epicstatis (nose) - Loose tooth and bite occlusion, hoarness of voice, laceration (mouth) **Abdomen** - check 4 quadrants	**Neck** - Gently feel the sides of the neck for signs of injury - Jugular vein if distended - Compare both collarbone and shoulders - Palpate tracheal position **Chest and ribcage** - assess accessory muscle - Check for Poland syndrome, scoliosis - auscultate heart and brreath sounds **Hipbone** - check for hip fracture especially in geria

- "Circumstances can force your hand. So think ahead" - Robert A. Heinlein

D. PATIENT / CASUALTY HANDLING

- Emergency rescue
    - rapid movement of patient from unsafe place to a place of safety
- Indication for emergency rescue
    - Danger of fire
    - Danger of toxic gases or asphyxia
    - Risk for drowning
    - Danger of electrocution (due to flashflood)
    - Danger of collapsing wall and landslide

E. FACTORS TO BE CONSIDERED IN THE SELECTION OF TRANSFER METHOD

- Nature and severity of injury
- Size of the victim
- Physical ability of the first aider
- Number of personnel and equipment available
- Evacuation route
- Distance to be covered
- Sex of the victims (last to consider)

POINTERS TO BE OBSERVED DURING TRANSFER

- Victims airway must be maintained open
- Hemorrhage is controlled
    - do not transfer patient until bleeding is controlled
- Regular check-up of the victim's condition
- Patient's body is moved as one unit
- Supporting bandages and dressing remain effectively applied

METHODS OF RESCUE

ONE-MAN ASSIST/ CARRIER

- **One-man drag**
    - Drag or pull the victim
- **One man assist/carrier**
    - Asisst to walk
- **One-person lift**
    - This only works for a child or a very light person
        - Place your arm under the victim's knee and around their back
- **Firefighter carry**
    - This technique is for carrying a victim in a longer distance
        - The victim is carried over one shoulder
        - The rescuer's arm on the side where the victim is being carried is wrapped accross the victim's leg and grasp the victim's opposite arm
- **Pack-strap carry**
    - This method is better for longer distance than the one person lift
        - Place both of the victim's arms grasping the opposite wrist.
        - Pull the arm close to your chest.
        - Squat slightly and drive your hips into the victim while bending slightly at waist
        - Balance the load on your hips and support the victim with your legs
- **Ankle pull**
    - It is the fastest method for moving a victim in a short distance over a smooth surface
        - Grasp the victim by both ankles or pant cuffs.
        - Pull with your legs, not your back.
        - Keep your back as straight as possible.
        - Try to keep the pull as straight and in-line as possible.
        - Keep aware that the head is unsupported and may bound over bumps and surface imperfections
- **Shoulder pull**

- It supports the head of the victim. The negative is that it requires the rescuer to bend over at the waist while pulling
    - Grasp the victim by the clothing under the shoulders.
    - Keep your arms on both sides of the head.
    - Support the head.
    - Try to keep the pull as straight and in-line as possible

- **Blanket pull**
    - This is the preferred method for dragging a victim
        - Place the victim on the blanket by using the “logroll” or the three-person lift
        - The victim is placed with the head approximately 2 ft. from one corner of the blanket.
        - Wrap the blanket corners around the victim.
        - Keep your back as straight as possible.
        - Use your legs, not your back.
        - Try to keep the pull as straight and in-line as possible.

TWO-MAN ASSIST/ CARRIER

- **Human crutch/ two-person drag**
    - For the conscious victim, this carry allows the victim to swing their leg using the rescuers as a pair of crutches.
    - For the unconscious victim, it is a quick and easy way to move a victim out of immediate danger
        - Start with the victim on the ground.
        - Both rescuers stand on either side of the victim’s chest.
        - The rescuer’s hand nearest the feet grabs the victim’s wrist on the side of the victim.
        - The rescuer’s other hand grasps the clothing of the shoulder nearest them
        - Pulling and lifting the victim’s arms, the rescuers bring the victim into a sitting position
        - The conscious victim will then stand with the rescuer’s assistance
        - the rescuers place their hands around the victim’s waist
        - For the unconscious victim, the rescuers will grasp the belt or waistband of the victim’s clothing
        - The rescuers will then squat down
        - Place the victim's arms over their shoulders so that they end up facing the same direction as the victim
        - The rescuers then move out, dragging the victim's legs behind
- Four-handed seat
    - This technique is for carrying conscious and alert victims moderate distances. the victim must be able to stand unsupported and hold themselves upright during transport.
        - Position the hands as indicated in the graphic
        - Lower the seat and allow the victim to sit
        - Lower the seat using your legs, not your back
        - when the victim is in place, stand using your legs, keeping your back straight
- Two-handed seat
    - This technique is for carrying a victim in longer distances. This technique can support an unconscious victim
        - Pick up the victim by having both rescuers squat down on either side of the victim
        - Reach under the victim’s shoulders and under their knees
        - Grasp the other rescuer’s wrists
        - From the squat, with good lifting technique, stand
        - Walk in the direction that the victim is facing
- Chair carry
    - This is a good method for carrying victims up and down stairs or through narrow or uneven areas
    - Note: The chair used should be sturdy one. Don’t use aluminum beach chairs, resin patio chairs, swivel chairs, or lightweight folding chairs. Remember that chairs with wheels can be used to roll the victim, but should not be used for a carry
        - Pick the victim up and place them or have them it in a chair
        - The rescuer at the head grasps the chair from the sides of the back, palms in
        - The rescuer at the head then tilt the chair back onto its rear legs
        - For shorter distances or stairwells, the second rescuer should face in and grasp the chair legs
        - For longer distances, the second rescuer should separate the victim’s legs, back into the chair and, on the command of the rescuer at the hea, both rescuer’s stand using their legs
- Improvised stretcher
    - This technique requires two poles/ pipes strong enough to support the victim’s weight and at least two shirts
        - While the first rescuer is grasping the litter poles, the second rescuer pulls the shirt off the head of the rescuer one
        - All buttons should be buttoned with the possible exception of the collar and cuffs
        - The rescuers then reverse the procedure and switch sides
- Blanket stretcher
    - This technique required two poles and a blanket
        - Place the blanket down on the ground
        - Place one pole approximately 2 foot from the middle of the blanket

        - Fold the short en of the blanket over the first pole
        - Place the second pole approximately 2 feet from the first (this distance may vary with victim or blanket size)
        - Fold both halves of the blanket over the second pole

THREE OR MORE RESCUERS

- Hammock carry
    - Three or more rescuers get on both sides of the victim. The strongest member is on the side with the fewest rescuers
        - Reach under the victim and grasp one wrist on the opposite rescuer
        - The rescueres on the ends will only be able to grasp one wrist on the opposite rescuer
        - The rescuers with only one wrist grasped will use their free hands to support the victim's head and feet/legs
        - The rescuers will then squat and lift the victim on the command of the person nearest the head, remembering to use proper lifting techniques
- Three-person carry or stetcher lift
    - This technique is for lifting patients onto a bed or stretcher, in a short distance
        - Each person kneels on the knee nearest the victim's feet
        - On the command of the person at the head, the rescuer's lift the victim up and rest the victim on their knees
            - If the patient is being placed on a low stretches or litter basket, on the command of the person at the head, the patient is placed down on the litter/ stretcher
            - If the victim is to be placed on a high gurney/ bed or the carried, the rescuers will rotate the victim so that the victim is facing the rescuers, resting against the rescuer's chest
        - On the command of the person at the head, all the rescuers will stand
        - To walk, all rescuers will start out on the same food, walking in a lind abreast.

F. INITIAL TRIAGE AND TAGGING

- Triage is a sorting of patients into categories of priority for and transport based on the severity of injuries and medical emergencies

TAGGING OF PATIENTS	
Pt. 1	(Red) Immediate - life threating injury
Pt. 2	(Yellow) Delayed - non-life-threatening
Pt. 3	(Green) Minor - minor injuries
Pt. 4	(Black) Deceased

I. RESPONDING TO INJURY

A. GENERAL CARE GUIDELINES

When caring for injury in any facility, follow these general care guidelines:

- Activate EAP (Emergency action plan)
- Scene Size up
- Form initial Impression
- Conduct Primary Assessment
    - To determine if the victim has life-threatening conditions. if so, summon an EMS personnel if the call has not been made; if no life-threatening conditions are found, perform a secondary assessment and care for any conditions you may find

SCENE SIZE UP AND FORMING AN INITIAL IMPRESSION

- Use your senses to check for hazards that could present a danger
- Use appropriate personal, protective equipment
- Determine the number of victims
- Determine the nature of the illness
- Form an initial impression to determine if a life-threatening emergency exists
    - Ex: Unresponsiveness, severe bleeding
    - Does the victim look sick?
    - Is the victim awake and moving?
- If the scene appears to be unsafe, move to a safe distance, notify additional members of the safety team, and wait for their arrival

B. SOFT TISSUE INJURIES

- **Wound -** Any injury to the soft tissues such as the skin, fat, or muscle
- **Types:**
- **Closed wounds** - occur beneath the skins attached surface
    - Ex: Bruises and internal bleedings
- **Open wounds -** the skin is broken
    - Can lead to external bleeding
    - Ex: Abrasion, laceration, avulsion, or puncture

Managements:

- Always apply appropriate personal protective equipment before coming in contact with a victim
- Most external bleeding injuries that you encounter will be minor such as a small cut that can be cared for by applying direct pressure over the wound until the bleeding stops, cleaning the wound and applying an adhesive bandage with a wound gel or antibiotic ointment
- **Major wounds** do not stop bleeding on their own. To care for this,
    - activate EAP and have someone summon EMS then cover the wound with a sterile gauze dressing and apply direct pressure over the wound using the flat of your fingers.
    - You can ask the victim to apply direct pressure.
    - If blood soaks through the first gauze pad place another pad on top and apply direct pressure if necessary.
    - Cover the dressing with a roller bandage and secure it directly over the wound
    - Check for circulation beyond the injury
    - If the wound bleeds through, do not remove the original bandage, apply additional dressings over the soaked bandage and apply direct pressure
    - If a wound still won't stop bleeding, follow local protocols when considering other methods of bleeding control.
    - Care for other conditions that may develop including shock

SHOCK

- Any serious injury or illness can result in shock which is a life-threatening condition in which the circulatory system fails to deliver enough oxygen-rich blood to the body's tissue and organs

Signs and symptoms:

- Restlessness or irritability
- Altered level of consciousness (LOC)
- Pale, ashen, cool, or moist skin
- Nausea and vomiting
- Rapid breathing and pulse
- Excessive thirst

Management:

- To minimize the effects of shock:
    - ensure EMS personnel have been called
    - have the victim lie flat on their back
    - control any external bleeding
    - help maintain a normal body temperature
    - monitor the victim's condition
    - watch for changes in level of consciousness
    - administer emergency oxygen if it is available and you are trained to do so
    - never give food or water to a victim in shock
    - comfort and reassure the victim until EMS personnel arrive and take over

BURNS

- Another type of soft tissue injury that can also occur at aquatic facilities
- Heat radiation, chemical, and electrical depending on the source and severity of the burn

Signs and symptoms:

- redness
- blistering
- charring

Management:

- Remove the person from the source of the burn then cool the burned are with large amounts of cool or cold tap water for at least 10 minutes
- If cool or cold water is not available, use a clean cold compress
- If a dry chemical caused the burn, first brush the chemical away with another object before flushing the area
- Cover the burn loosely with a sterile dressing and take steps to minimize shock
- Comfort and reassure the victim and instruct them to seek follow-up care

C. HEAT AND COLD-RELATED ILLNESSES

- Environmental conditions can cause heat-related illnesses or cold-related emergencies without extreme temperatures

HEAT-RELATED ILLNESSES

- Heat cramps, heat exhaustion, and heat stroke are a progressive conditions that can result in death

Signs and Symptoms of Heat cramps or Heat exhaustion: may experience

- painful muscle spasms
- Cool, moist, pale, ashen, or flushed skin
- headache
- nausea and dizziness
- weakness and exhaustion
- Heavy sweating

Signs and symptoms of Heat stroke: If the situation progresses to heat stroke,

- their skin may be hot to the touch
- wet, dry, red, or pale
- may not be sweating
- may experience changes in level of consciousness (LOC)
- Vision disturbances
- Seizures
- Vomiting
- Rapid and shallow breathing
- Rapid/weak pulse

Management:

- Move them to a cool place
- Loosen or remove clothing as appropriate
- Cool the victim
- If responsive and able to swllow, encourage them to drink small amounts of a commercial sports drink, coconut water, or milk
- If the victim refuses to drink, vomits, or has a mental status change, vision disturbances, or a seizure, summon an EMS personnel immediately and take steps to rapidly cool the victim as soon as possible
- If it is safe to do so, immerse the victim up to their neck in cold water and continue to monitor them for breathing and a pulse

COLD-RELATED ILLNESSES

- Includes Hypothermia and frostbite

Hypothermia

- occurs when the victim's entire body cools because it's ability to keep warm fails
- can progress into a life-threatening condition
- prompt action at the onset can prevent body temperature from dropping to dangerous level

Signs and symptoms of Hypothermia:

- may seem indifferent
- disoriented or confused
- may notice that the victim has a glassy stare
- initially, the victim may shiver but as the hypothermia progresses, the shivering may stop
    - a sign that the victim's condition is worsening and needs immediate medical care

Management:

- Gently move the victim to a warm place
- Remove any wet clothing and warm the victim with blankets or by putting them in dry clothing
- Be sure to cover their head
- Monitor the victim's conidition, watching for changes in level of consciousness
- Summon EMS if necessary

II. RESPONDING TO SUDDEN ILLNESSES

- Sudden illnesses and injuries can occur anytime any place. You may encounter many types of sudden illnesses including:
    - Diabetic emergencies
    - Fainting
    - Seizures
    - Stroke
- In any first aid emergency, you must decide how best to respond to the situation including when to activate the EAP
- Consider the following when deciding how to act:
    - "Should I provide care?"
    - Where the victim was found
    - Should they be moved
    - Is the safety of the victim or others compromised
    - Is there a risk of further injury to the victim
    - Is there a risk of exposing the victim or others to pathogens
    - Should a summon EMS personnel
    - When should I recommend that the victim see a healthcare provider to seek further medical treatment

Assessment:

- To assess a sudden illness or injury, apply PPE and perform a primary assessment asking for consent if appropriate
- Care for any life-threatening conditions and use the sample mnemonic to obtain history
- If no life-threatening conditions are found, perform a seconddary assessment
- If you think something is wrong, don't be afraid to ask questions
- Look to see if the victim is wearing a medical ID tag that can give you more clues

Signs and symptoms: Many sudden illnesses have similar signs and symptoms:

- Lightheadedness
- Dizziness or changes in LOC
- Confusion
- Altered mental status
- Unresponsive
- Nausea and vomiting
- Difficulty speaking or slurred speech
- Numbness or weakness
- Loss of vision or blurred vision
- Changes in breathing
- Changes in skin color
- Sweating
- Persistent pressure or pain
- Diarrhea
- Paralysis or an inability to move
- Severe Headache

Management: Although you may not know eaxctly what is wrong, guidelines for caring for any sudden illness are:

- Summon EMS
- Provide appropriate care
- Monitor the victim's condition and watch for changes in LOC
- Keep the victim comfortable
- Reassure the victim and keep them from getting chilled or overheated
- Be sure the victim is fully awake, able to swallow, and follow simple commands
- Intake is indicated based on the treatment recommendations before administering any food or drink as part of care
- Care for any other problems that develop such as voimiting, remember that the victim's condition may worsen rapidly
- Call EMS appropriate

A. DIABETIC EMERGENCIES

- people who have diabetes may become ill because they have too much or too little sugar in their blood

Signs and Symptoms: a person having a diabetic emergency may experience

- changes in LOC
- confusion
- irregular breathing
- abnormal pulse
- feeling or looking ill
- abnormal skin characteristics

Management:

- If a person is having a diabetic emergency and is awake and able to swallow
    - give 15 to 20 grams of sugar in the form of glucose tablets to the victim.
    - If not available 15 to 20 grams of sugar from several sources can be given
        - glucose and sucrose containing candies, jelly beans, orange juice, or whole milk
- Monitor the person's condition
- call EMS if the person loses consciousness or is unable to swallow or if their condition doesn't improve within 10 to 15 minutes of taking sugar or if the victim feels worse after taking sugar

B. SEIZURES

- during a seizure a person may lose consciousness and experience sudden uncontrollable muscular convulsions lasting several minutes

Signs and symptoms:

- breathing may become irregular and even stopped temporarily
- a seizure is also considered a possible sign of cardiac arrest so the victim should be assessed and monitored closely

Management:

- if a person is actively seizing activate the EAP and remove nearby objects that could cause injury
- protect the person's airway and allow the seizure to run its course
- attempting to stop the seizure or restraining the person can cause injuries
- do not place objects or fingers into the mouth of an actively seizing person
- if the victim is responsive and breathing normally but not fully awake after the seizure is over, check the victim for injuries and place the victim in the recovery position
- reassure the person as you monitor their condition
- If a person has a seizure in the water, summon EMS and support the person with their head above water until the seizure ends remove them from the water as soon as possible after the seizure, positioning them on their back
- perform a primary assessment and provide appropriate care

C. STROKE

- a stroke occurs when blood flow is blocked from reaching part of the brain or when there is bleeding in the brain
- a stroke can cause permanent damage to the brain if not treated soon after the onset of signs and symptoms so time is critical

Signs and Symptoms:

- sudden weakness or numbness of the face and arm or leg usually only on one side of the body
- difficulty speaking
- blurred vision
- severe headache
- dizziness or confusion
- loss of balance
- ringing in the ears

Assessment:

- use the fast mnemonic to help identify and care for a stroke
    - F - face: ask the person to smile this will show if there is drooping or weakness on one side of the face
    - A - arm: ask the person to raise both arms in front of themselves to find out if there is weakness in the limbs
    - S - speech: ask the person to speak a simple sentence and then listen for slurred or distorted speech
    - T - time: time is critical if someone demonstrates any of these symptoms call EMS immediately

D. ANAPHYLAXIS

- Because sudden illnesses can have serious complications it is important to continually monitor the victim
    - Ex: people with severe allergies could quickly progress to anaphylaxis
    - Ex: respiratory distress to respiratory arrest

Management:

- as you assess what's happening, be sure to summon EMS personnel immediately
- if the victim knows of their condition and has medication with them, help the victim access their medication right away
- continue to monitor the victim's condition even if they have taken medication while you wait for EMS to arrive
- if the victim has already taken the medication, help them administer a second dose only if EMS is delayed and they are still demonstrating signs and symptoms of anaphylaxis 5 to 10 minutes after administering the first dose
- help the victim maintain an open airway if necessary

E. ASTHMA

- asthmais a chronic condition in which the airway swell or become blocked as a result of various triggers can also have
- serious complications during an asthma attack, breathing can become progressively difficult even resulting in respiratory distress

Management:

- if you suspect someone is having an asthma attack, assist a person with their prescribed quick relief medication usually an inhaler if requested and if permitted by state or local regulations
- after assisting with the asthma inhaler, continue to monitor the victim's condition
- call EMS if breathing does not improve

III. CONSCIOUS CHOKING

A. ADULT AND CHILD

- when something is lodged in someone's throat, the natural response is to cough

Management:

- If the person is coughing forcefully, they are getting air, encourage them to keep coughing
- If an adult or child cannot cough, has an ineffective cough, or cannot speak or breathe, they might be choking.
- Call for more advanced medical personnel and obtain consent
- Position yourself to the side and slightly behind the victim
    - place one arm diagonally across the chest
    - bend the victim forward so their upper airway is at least parallel to the ground
    - using the heel of one hand, give five firm back blows between the victims shoulder blades
    - if the object has not been dislodged, give five abdominal thrusts
    - stand behind the victim and while maintaining your balance, make a fist with one hand and place it thumb side against the victims abdomen just above the navel
    - cover the fist with your other hand and give quick upward thrusts
    - continue delivering a combination of back blows and abdominal thrusts until the object is forced out, the person can cough speak or breathe, or the victim becomes unresponsive
- If the victim becomes **unresponsive**, gently lower them to a firm flat surface and immediately begin CPR starting with compressions and forward
- If you cannot reach far enough around a choking victim, to give abdominal thrusts, or if the victim is obviously pregnant or known to be pregnant, use back blows and chest thrusts to try to dislodge the object
    - you might need to kneel behind a child to give effective back blows and abdominal thrusts
    - do not use as much force with a child

B. INFANT

- if an infant cannot cough cry or breathe, perform a series of five back blows and 5 chest thrusts
- position the infant face down along your forearm supporting the infant's head and neck
- lower the infant on to your thigh, keeping their head lower than their chest
- using the heel of your hand, give five firm back blows between the infant's shoulder blades
- if the object is not dislodged, position the infant between both of your forearms and turn their face up
- lower the infant on to your opposite thigh, keeping their head lower than their body
- place two fingers on the center of the chest just below the nipple line and give 5 chest thrusts about one and a half inches deep
- continue giving five back blows and 5 chest thrusts until the object is forced out, the infant begins to cough forcefully, cry, or breathe on their own or until the infant becomes unresponsive
- if the infant becomes unresponsive, placed them carefully on a firm flat surface and begin CPR starting with compressions

IV. CARDIAC CHAIN OF SURVIVAL

- cardiac emergencies are life-threatening and can happen at any time to a victim of any age, on land, or in the water
- when a person is in cardiac arrest, quick action is crucial
- describes five actions that when taken increase a person's likelihood of surviving cardiac arrest
    - cardiac chain of survival for adults
    - cardiac chain of survival for children and infants

ADULT CHAIN OF SURVIVAL

- Safety team play a major role in completing the first three actions

1. Recognition of the emergency and activation of the emergency response system
    - recognition of the emergency and access to the EMS system gets help on the way quickly
    - the sooner you recognize that a person is in cardiac arrest and some an EMS personnel, the sooner advanced medical personnel will arrive early
2. Early CPR
    - CPR helps to circulate oxygen-rich blood to the brain and other vital organs, helping to prevent brain damage and even death
3. Early defibrillation
    - the electrical shock delivered by an AED may help re-establish an effective heart rhythm, significantly increasing the person's chances for survival
4. Advanced life support
    - is provided by EMS personnel at the scene and on the way to the hospital
5. Integrated post-cardiac arrest care
    - after the person is resuscitated, medical professionals work to stabilize the person's medical conditions, minimize complications, and diagnose and treat the underlying cause of the cardiac arrest

PEDIATRIC CHAIN OF SURVIVAL

- slightly different from the adult because cardiac arrest in children often occurs as the result of a preventable injury such as drowning

1. Injury Prevention and Safety
2. Early CPR
3. Activation of the EMS system (Recognize Emergency and Call 911)
4. Advanced Life Support/medical care
5. Integrated post-cardiac arrest care
    - medical professionals can provide the knowledge, equipment, and medications to continue the life-saving care