1. EMERGENCY MANAGEMNT:

Emergency nursing: The term emergency is used for those patients who require immediate action to prevent further deteriorations or stabilizing the condition till the availability of the services close to the patients.

Principle of emergency nursing:

- Establish a patent airway and provide adequate ventilation
- Control haemorrhage, prevent and manage shock
- Maintain and restore effective circulation
- Evaluate the neurological status of the client
- Carry out a rapid initial and ongoing physical assessment
- Start cardiac monitoring
- Protect and clean wounds
- Identify significant medical history and allergies
- Document the findings in medical records

Scope of emergency nursing:

- To provide immediate action to treat the patient
- For crisis intervention
- To treat emergency condition irrespective of age group
- To treat wide variety of illness or injury situations, ranging from sore throat to heart attack

Principle of emergency management and emergency medical services:

- Early detection
- Early reporting
- Early response
- Care during transportation

General Principle of emergency medical care:

- Triage
- Primary survey using CABD approach: Circulation, airway, breathing, disability
- Secondary survey using EFGHI approach:
  - Exposure to environment
  - Full set of vital signs

    - Give comfort measures
    - History collection
    - Inspect the posterior surface
  - Secondary survey using AMPLE approach
    - Allergy
    - Medical history
    - Past health history
    - Last meal
    - Events or environment preceding illness or injury

2.Medical surgical emergencies: Medical emergencies is a serious and unexpected situation involving illness or injury and requiring immediate action.

- Burns and scalds
- Heart attack
- Major cuts
- Heat stroke: It is also known as sun stroke, is a type of severe heat illness that results in a body temperature greater than 40.0 degree Celsius (104.0F).
- Fractures
- Electrocution: caused by touching a live and naked wire, cable or rail, a shock may be relatively mild, or extremely severe.
- Bites/stings
- Choking: when an obstruction blocks the windpipe, causing a person to be severely short of breath. Dislodge the respiratory tract obstruction by bending the patient's head and shoulders forward, or in the case of a small child, hold them upside down and thump the back hard, between the shoulder-blades. Try inducing vomiting to help the person regurgitate the item causing the blockage.
- Seizures
- Eye-trauma

Surgical emergencies: It is a medical emergency for which immediate surgical interventions is the only way to solve the problem successfully.

- Acute trauma cardiothoracic
- Acute airway obstruction
- Acute appendicitis
- Gastrointestinal perforation
- Peritonitis
- Testicular torsion

- Ectopic pregnancy
- Retinal detachment
- Internal bleeding
- Aortic dissection

3.Airway obstruction: Any obstacle from mouth to lungs may be partial or complete limitation of air entry into lungs causing lack of O2 inflow or C02 outflow.

- Causes: coma, cardiac arrest: tongue displacement
- Anaphylaxis foreign body irritants: tongue oedema, laryngeal spasm
- Foreign body: laryngeal or tracheobronchial obstruction
- Trauma: laryngeal damage
- Infection anaphylaxis: Laryngeal oedema
- Asthma foreign body irritants anaphylaxis: bronchospasm
- Near drowning, neurogenic shock: pulmonary edema

Signs and symptoms:

- Dyspnea and noisy breathing
- Breathing is labored
- Day time somnolence
- Sleep apnea syndrome
- Chronic hypoxemia and hypercarbia
- Cyanosis, pallor, tachycardia, restlessness, anxiety

Methods:

1). Manual manoeuvres:

- Mostly done at site, also in ambulance
- Head tilt, chin lift, jaw thrust
- Clearing mouth with hooked finger

2). Instrumentation:

- If above unsuccessful. Mostly ambulance/ hospital facility
- Various artificial airways like AMBU bag. Oropharyngeal and nasopharyngeal airway. Endotracheal tube.

3). Surgical airway:

- If 2nd option unsuccessful, almost always in hospital
- Surgical creation/bypass of airway
- Anatomical landmarks important
- Only skilled professional should attempt.
- Includes cricothyroidotomy and tracheostomy.

Manual manoeuvres:

- See for any response/ Call name
- Call for help/ambulance
- Head tilt and chin lift (opens the oral airway if tongue obstruction)
- Hear for breathing, see chest movements, if No then start mouth to mouth, breaths, but nose must be pinched to avoid leakage of air
- Lateral lying position for a breathing unconscious patient
- Artificial airways: AMBU Bag and procedure (remember to do head tilt and chin lift to open the airway otherwise bagging will be infective). Laryngoscopy with various sizes of blades (left picture) used to intubate, endotracheal tube with cuff

4. Hemorrahage : Bleeding, also known as a hemorrhage, haemorrhage, or simply blood loss, is blood escaping from the circulatory system from damaged blood vessels. Bleeding can occur internally, or externally either through a natural opening such as the mouth, nose, ear, urethra, vagina or anus, or through a wound in the skin.

CAUSES:

Bleeding arises due to either traumatic injury, underlying medical condition, or a combination.

Traumatic injury[

Traumatic bleeding is caused by some type of injury. There are different types of wounds which may cause traumatic bleeding. These include:

- Abrasion – Also called a graze, this is caused by transverse action of a foreign object against the skin, and usually does not penetrate below the epidermis.
- Excoriation – In common with Abrasion, this is caused by mechanical destruction of the skin, although it usually has an underlying medical cause.

- Hematoma – Caused by damage to a blood vessel that in turn causes blood to collect under the skin.
- Laceration – Irregular wound caused by blunt impact to soft tissue overlying hard tissue or tearing such as in childbirth. In some instances, this can also be used to describe an incision.
- Incision – A cut into a body tissue or organ, such as by a scalpel, made during surgery.
- Puncture Wound – Caused by an object that penetrated the skin and underlying layers, such as a nail, needle or knife.
- Contusion – Also known as a bruise, this is a blunt trauma damaging tissue under the surface of the skin.
- Crushing Injuries – Caused by a great or extreme amount of force applied over a period of time. The extent of a crushing injury may not immediately present itself.
- Ballistic Trauma – Caused by a projectile weapon such as a firearm.

Medical condition

"Medical bleeding" denotes hemorrhage as a result of an underlying medical condition (i.e. causes of bleeding that are not directly due to trauma). Blood can escape from blood vessels as a result of 3 basic patterns of injury:

- Intravascular changes – changes of the blood within vessels (e.g. ↑ blood pressure, ↓ clotting factors)
- Intramural changes – changes arising within the walls of blood vessels (e.g. aneurysms, dissections, AVMs, vasculitides)
- Extravascular changes – changes arising outside blood vessels (e.g. *H pylori* infection, brain abscess, brain tumor)

The underlying scientific basis for blood clotting and hemostasis is discussed in detail in the articles, coagulation, hemostasis and related articles. The discussion here is limited to the common practical aspects of blood clot formation which manifest as bleeding.

The symptoms include:

- A sudden **severe** headache.
- Seizures with no previous history of seizures.
- Weakness in an arm or leg.
- Nausea or vomiting.
- Decreased alertness; lethargy.
- Changes in vision.
- Tingling or numbness.

- Difficulty speaking or understanding speech.

Management:

Place a sterile bandage or clean cloth on the wound. Press the bandage firmly with palm to control **bleeding**. Apply constant pressure until the **bleeding** stops. Maintain pressure by binding the wound with a thick bandage or a piece of clean cloth.

5. **Intra abdominal Trauma**:

Abdominal trauma is an **injury** to the **abdomen**.

Causes:

- motor vehicle crashes (MVCs),
- fall from height and assaults to be the most common causes of blunt abdominal trauma.
- The penetrating trauma is mainly caused by gunshot, stab, and other objects that enter the peritoneal cavity.
- In children, bicycle mishaps are also a common cause of abdominal injury.

Signs and symptoms:

- Signs and symptoms are not seen in early days and after some days initial pain is seen.
- People injured in motor vehicle collisions may present with a "seat belt sign", bruising on the abdomen along the site of the lap portion of the safety belt; this sign is associated with a high rate of injury to the abdominal organs. Seatbelts may also cause abrasions and hematomas;
- Early indications of abdominal trauma include nausea, vomiting, blood in the urine, and fever.
- The injury may present with abdominal pain, tenderness, distension, or rigidity to the touch, and bowel sounds may be diminished or absent.

Injuries associated with intra-abdominal trauma include rib fractures, vertebral fractures, pelvic fractures, and injuries to the abdominal wall.

Diagnostic evaluation:

- History collection and physical examination
- Blood test

- Ultrasound abdomen
- CT scan / MRI
- Peritoneal lavage: Diagnostic peritoneal lavage is a controversial technique but can be used to detect injury to abdominal organs: a catheter is placed in the peritoneal cavity, and if fluid is present, it is aspirated and examined for blood or evidence of organ rupture. If this does not reveal evidence of injury, sterile saline is infused into the cavity and evacuated and examined for blood or other material.

Management:

Initial treatment involves stabilizing the patient enough to ensure adequate

airway, breathing, and circulation, and identifying other injuries.

Surgical management:

Surgery may be needed to repair injured organs. Surgical exploration is necessary for people with penetrating injuries and signs of peritonitis or shock. Laparotomy is often performed in blunt abdominal trauma and is urgently required if an abdominal injury causes a large, potentially deadly bleed.

6. **Crush injuries:** A crush injury occurs when force or pressure is put on a body part. This type of injury most often happens when part of the body is squeezed between two heavy objects.

Damage related to crush injuries include:

- Bleeding
- Bruising
- Compartment syndrome (increased pressure in an arm or leg that causes serious muscle, nerve, blood vessel, and tissue damage)
- Fracture (broken bone)
- Laceration (open wound)
- Nerve injury
- Infection (caused by bacteria that enter the body through the wound)

First Aid
Steps for first aid treatment of a crush injury are:

- Stop bleeding by applying direct pressure.

- Cover the area with a wet cloth or bandage. Then, raise the area above the level of the heart, if possible.
- If there is suspicion of a head, neck, or spinal injury, immobilize those areas if possible and then limit movement to only the crushed area.
- Call local emergency number (such as 108) or local hospital for further advice.

Crush injuries most often need to be evaluated in a hospital emergency department. Surgery may be needed.

7. **Poisoning: Poisoning** is a condition or a process in which an organism becomes chemically intoxicated by an exogenous substance, usually by **ingestion** or external exposure.

or

Poisoning: Poisoning occurs when a certain amount of a toxic material (natural or processed) gets into the body; thus, harming the body

Ingested poisoning: An ingested poison is considered any substance that's harmful to the body when ingested, whether intentionally or unintentionally. Any substance that's ingested can be poisonous if enough is consumed, even water.

Entry points of toxic material into the body:

1. **Swallowing:** Through one's mouth and the digestive system.
2. **Inhalation:** Through the respiratory system (such as poisonous fumes and gases, as well as invasive anaesthetic drugs).
3. **Injection:** Including insect bites, skin, under skin, intramuscular or intravenous injection.
4. **Skin:** By absorption (such as lotions and chemical substances).

Symptoms of Poisoning:

Clinical Signs and Symptoms:

a) **Gastrointestinal Symptoms:**

- Nausea and vomiting - acute abdominal pains - diarrhoea
- Vomiting smells like bitter almond - such as in the case of cyanide poisoning - and inorganic phosphorus (garlic odour).

b) **Respiratory Symptoms:**

- Cough - cyanosis - breathing difficulties in irritant gases and fume poisoning.
- The normal breathing rate for an adult is 16 times per minute.

c) **Brain Symptoms:**
   a. Victims show such signs due to infection of their central nerve system, including:
      i. Loss of consciousness
      ii. Seizures (fits)
      iii. Mental confusion

Poisoning First Aid General Rules:

Providing express first aid to the victim is meant to mitigate the toxic substance as fast as possible, while seeking medical assistance, maintaining breathing, blood circulation and other vital signs.

To correctly provide first aid, one should:

1. Make sure that there is no other risk – for the victim - due to administering first aid.
2. If possible:
   - Identify the poison, drug or food, and keep it vessel, remnants or cover.
   - Identify the dosage or the intake of such substance.
   - Verify the duration (since how long has the victim taken it).
   - The Victim's age and weight.
3. If poisoning is deliberate of by mistake.
4. Observe the symptoms (acute or mild).
5. If the victim vomits, keep the vomited material (for test purposes by the concerned authorities).
6. Call the Poison Control or hospital and get the first aid advice.
7. Call the ambulance or medical assistance, or carry the victim to the nearest hospital.
8. Make sure to have the toxic material and its bottle along with the victim to the hospital.
9. If the victim is unconscious: Check his/ her breath and provide C.P.R if needed.

Most Common Causes of Poisoning:

1. Poisons removed from original containers to bottles, such as household cleaners and bleaches.
2. Parents' negligence leaving dangerous substances within children reach.
3. Improper storage of toxic substances.
4. Swallowing or inhaling toxic substances.
5. Leaving children unattended.
6. Suicidal thoughts

Poisonous Contamination of Skin and Eyes:

First: First Aid in cases of Chemical and Household Cleaners Poisoning:

1. Check breath and provide C.P.R if needed.
2. Give cold milk and egg white.
3. Give strong pain reliever.
4. Do not force victim to vomit.
5. No gastric lavage.
6. No acids, such as vinegar and lime juice in case of acid poisoning.
7. Take victim immediately to hospital.

Second: Disinfectants and sterilant (phenol, detol, and formalin)
Excessive exposure to such toxic materials by touching or inhaling may cause poisoning, so ventilation is highly important after using these materials.

First Aid in cases of swallowing household disinfectants and sterilants:

1. For skin contamination, wash with plenty of water, then dilute with 10% alcohol; better use olive or castor oil.
2. If case of drinking disinfectants, better give ipecac to induce vomiting, only when victim is conscious.
3. Take victim immediately to hospital.

Second: Inhalation Poisoning:
Many poisoning cases occur due to inhaling toxic fumes or gases, where the toxin rapidly hits the bloodstream. So, administer first aid as fast as possible in these cases following these instructions:

1. Take the victim immediately away from the from the poisonous aerated milieu to clean air, while removing any tight clothes and untying the necktie.

2. Provide rescue breaths in case of respiratory failure of difficulty after removing anything inside the mouth as follows:
    - Titling the head back to open the airway, while closing the nose trills with two fingers, taking a deep breath, blowing air into the victim's lungs through the mouth; then watching the victim's chest rise accordingly.
    - Allow the victim to exhale which watching his chest fall.
    - Repeat same procedure till the victim breathes normally.
3. Warm up victim if sign of cold or chill is found.
4. Calm down the victim if conscious.
5. Take patient immediately to hospital.

Third: Skin Poisoning:
Skin may be contaminated by caustics which cause major skin damage, in which case such caustics must be removed as fast as possible as follows:

1. Wash skin with running water while removing the victim's clothes, then wash the skin with water and dilute with soap.
2. Do not apply any medication or chemicals to the contaminated skin least they should aggravate the skin damage.

Fourth: Eye Poisoning:
First aid for eye poisoning:

1. Open eyelids and wash with running water (at low pressure) for at least 10 minutes.
2. No eye drops.
3. Take patient immediately to hospital.

Food poisoning: Food poisoning: The illness resulting from eating food or drinking water containing poisonous substances including bacteria, viruses, pesticides, or toxins.

Signs and symptoms:

Symptoms generally begin within 2 to 6 hours and include abdominal cramping, diarrhea, fever, headache, nausea, vomiting, and weakness.

Treatment: Antibiotics, antiemetics, antidiarrheal drugs, IV fluids.

8. **stinging poison**: Bee stings are a common outdoor nuisance.

Signs and symptoms:

Bee stings can produce different reactions, ranging from temporary pain and discomfort to a severe allergic reaction.

Mild reaction

Most of the time, bee sting symptoms are minor and include:

- Instant, sharp burning pain at the sting site
- A red welt at the sting area
- Slight swelling around the sting area

In most people, the swelling and pain go away within a few hours.

Moderate reaction

Some people who get stung by a bee or other insect have a bit stronger reaction, with signs and symptoms such as:

- Extreme redness
- Swelling at the site of the sting that gradually enlarges over the next day or two

Moderate reactions tend to resolve over five to 10 days. Having a moderate reaction doesn't mean you'll have a severe allergic reaction the next time you're stung. But some people develop similar moderate reactions each time they're stung. If this happens to you, talk to your doctor about treatment and prevention, especially if the reaction becomes more severe each time.

Severe allergic reaction

A severe allergic reaction (anaphylaxis) to bee stings is potentially life-threatening and requires emergency treatment. A small percentage of people who are stung by a bee or other insect quickly develop anaphylaxis. Signs and symptoms of anaphylaxis include:

- Skin reactions, including hives and itching and flushed or pale skin

- Difficulty breathing
- Swelling of the throat and tongue
- A weak, rapid pulse
- Nausea, vomiting or diarrhoea
- Dizziness or fainting
- Loss of consciousness

Emergency treatment for allergic reactions

During an anaphylactic attack, an emergency medical team may perform cardiopulmonary resuscitation (CPR) if victim stops breathing or heart stops beating. medications including:

- **Epinephrine (adrenaline)** to reduce body's allergic response
- **Oxygen,** to help breathe
- **Intravenous (IV) antihistamines and cortisone** to reduce inflammation of air passages and improve breathing
- **A beta agonist (such as albuterol)** to relieve breathing symptoms
- **antihistamines**

9. **Snake bites:** An injury caused by a bite from a snake. A snake bite can be life-threatening if the snake is venomous.

Signs and symptoms:
Symptoms may include pain, swelling, redness or bleeding at the site of the bite. If a person is bitten by a snake, it's important that he or she remains calm, immobilises the bite area and removes jewellery or tight clothing. Emergency medical care should be obtained as soon as possible.

Management:

Note the Snake's Appearance

- Be ready to describe the snake to emergency staff.

2. Protect the Person

While waiting for medical help:

- Move the person beyond striking distance of the snake.
- Have the person lie down with wound below the heart.
- Keep the person calm and at rest, remaining as still as possible to keep venom from spreading.
- Cover the wound with loose, sterile bandage.
- Remove any jewelry from the area that was bitten.
- Remove shoes if the leg or foot was bitten.

Do not:

- Cut a bite wound
- Attempt to suck out venom
- Apply tourniquet, ice, or water
- Give the person alcohol or caffeinated drinks or any other medications

3. Follow Up

If you treat the bite at home:

- Contact a healthcare provider. The person may need a tetanus shot. Tetanus boosters should be given every 10 years.

At the hospital, treatment will depend on the type of snake.

- If the snake was venomous, the person will be given anti-venom treatment.
- A tetanus shot may be given, depending on the date of the last injection.

10.Hanging:

Hanging is a form of asphyxia death which is caused by the suspension of the body by ligature which encircles the neck, the constricting force being the weight of the body.

Types of hanging:

- Complete hanging: When feet do not touch the ground and the weight of the body acts as s constricting force.
- Partial hanging: When the weight of the head and not the whole body acts as a constricting force is known as partial hanging.

CAUSES OF DEATH IN HANGING:

- Obstruction of airway passage.
- Venous congestion.
- Vagal inhibition.
- Combination of above.
- Neurogenic shock.
- Fracture or dislocation of cervical vertebrae.
- Injury to spinal cord.
- Injury to pons or medulla.

LIGATURE: Any material used for suspension of body from neck. e.g. nylon rope, iron wire, saree, dupatta, neck-tie etc

General external P.M. findings:

- Neck is elongated.
- Head is tilted to opposite side of a knot.
- Face is pale, sometimes cyanosed.
- Cyanosis at lips, tongue, nose, ears, and nails.
- Eyes are bulging out, partially open. pupils dilated. Conjunctiva congested.
- Sometimes petechial haemorrhages present.
- Tongue if protruded, it is brown in colour.
- Dribbling of saliva from the angle of mouth, angle opposite to the site of knot.
- There may be little bloody froth at nose and mouth.
- Hands are clenched.
- Penis is erect/semierect.
- Relaxation of sphincters so there is incontinence of urine and faeces.
- Lungs are congested.
- Lungs exude bloody froth on squeezing the cut section.
- Respiratory passages contain bloody froth.

- Pleura, pericardium, meninges, brain, and abdominal viscera may show petechial haemorrhages.
- Rt. Chambers of heart, pulmonary artery and vena cava are full of blood, lt chambers being empty.
- Abdominal viscera are congested

MEDICOLEGAL ASPECTS OF HANGING

A] SUICIDAL HANGING: Very common mode of suicide.

Characteristics: It is explainable as self- hanging.

Usually done in a room from hook of fan, bamboo on roof, pipe of toilet, etc.

No signs of struggle.

Item used to jump is present at the scene.

Farewell note may be present.

He might have even used other method of attempting suicide. e.g. cutting of wrist or consuming mild poison.

HOMICIDAL HANGING: rare and is only possible when victim is young, very weak, given drug is injured or is overpowered by a gang.

Characteristics: Knot tied on back of neck.

Mouth may be gagged.

Limbs may be tied.

Signs of struggle are present.

Surroundings are disturbed.

P.M. hanging : Many times dead body is hanged to stimulate suicidal hanging, death having been caused by strangulation, throttling, head injury, smothering or by some other means.

Features of dragging of dead body present.

There are no fibres of ligature on the hands of dead.

At the point of suspension, there is evidence of rope having moved from below upwards.

Judicial hanging: Hanging is the method of capital punishment in India.

The person is made to stand on a trap which falls forward on pulling the bolt so that there is a fall of about 10-15 feet.

There is suspension of body with a sudden jerk.

Lynching: It is a method of homicidal hanging.

Person is overpowered by a group and forcibly hung to a tree.

Term is used to denote any death caused by a mob, for social offences.

ACCIDENTAL HANGING : Is possible-

Among children while playing and imitating hanging.

Fall from a height or tree or slipping from ladder and then suddenly getting suspended from neck.

Management:

1. Immediately remove any constriction from around the neck, Support the body
2. Do not move the casualty unnecessarily in case of spinal injury
3. Do not destroy or interfere with any material, such as knotted rope, that police may need as evidence.
4. Lay the casualty on the floor. Open the airway and check breathing.
5. If he/she is not breathing be prepared to resuscitate, start CPR
6. If he/she is breathing, place her in the recovery position.

11. Near drowning:

Near drowning" means a person **almost** died from not being able to breathe (suffocating) under water.

Most near-drowning cases are attributed to accidents that occur near or in the water. **The most common causes of near-drowning include:**

- an inability to swim
- panic in the water
- leaving children unattended near bodies of water
- leaving babies unattended, even for a short period of time, in bathtubs

- falling through thin ice
- alcohol consumption while swimming or on a boat
- concussion, seizure, or heart attack while in water
- suicide attempt

Someone who has nearly drowned may be unresponsive. Other **symptoms include:**

- cold or bluish skin
- abdominal swelling
- chest pain
- cough
- shortness or lack of breath
- vomiting

Management:

Near-drowning most often occurs when no lifeguard or medical professional is present. Tips for helping someone who is drowning include:

- Use safety objects, such as life rings and throw ropes, to help the victim if they are still conscious.
- Any person Should only enter the water to save an unconscious person if the person have the swimming skills to safely do so.
- It's important to start rescue breathing as soon as possible if the person has stopped breathing. CPR involves giving oxygen to the person through mouth-to-mouth movements. Chest compressions are equally important, because they help increase oxygen flow through the blood to prevent fatal complications.
- Be very careful when handling the person and performing CPR, as the individual could have a neck or spinal injury. Do not move or turn their

neck or head. Stabilize the neck by manually holding the head and neck in place or placing towels or other objects around the neck to support it.

- If the person has near-drowned in cold water, remove their wet clothes and cover them in warm blankets or clothing to prevent hypothermia. Be careful to support the neck while removing clothing.

If two or more people are present with the victim, one should start CPR, while the other call ambulance. If only one person is present with the victim, CPR should be done for one minute before calling ambulance.

Resuscitation may still be possible even if someone has been underwater for quite some time.

Near-drowning can cause complications depending on how long a person is deprived oxygen. Complications may include:

- pneumonia
- acute respiratory distress syndrome
- brain damage
- chemical and fluid imbalances in the body
- a permanent vegetative state

Most people survive near-drowning after 24 hours of the initial incident.

Even if a person has been under water for a long time, it may still be possible to resuscitate them. Do not make a judgment call based on time. Call ambulance and perform CPR.

Ways to help prevent drowning and near-drowning incidents

- Don’t drive on flooded roadways.
- Don’t run around the edge of a pool.
- Avoid drinking alcohol while swimming or boating.

- Take a water safety class.

Prevention in children

Drowning is the leading cause of unintentional injury related death in children 1-4 years old. Preventing near-drowning in children requires extra precautions. Here are some safety measures:

- Block child access to swimming areas.
- Never leave toys in pools (this can entice a young child to retrieve the toy).
- Swim with young children at an arm's length.
- Never leave a child alone in a bathtub.
- Keep children away from wells, creeks, canals, ponds, and streams.
- Empty inflatable or plastic kiddie pools and turn them over after each use (to prevent rain water from collecting).
- Install alarms around doors and windows, especially near by a pool or live near water.
- Have rescue materials and a phone nearby when swimming.
- Keep toilet bowl covers down (drowning can happen in an inch or less of water).

12. **Frost bite:** injury to body tissues caused by exposure to extreme cold, typically affecting the nose, fingers, or toes and often resulting in gangrene.

    Or

    Frostbite is an injury caused by freezing of the skin and underlying tissues.

    First skin becomes very cold and red, then numb, hard and pale. Frostbite is most common on the fingers, toes, nose, ears, cheeks, and chin. Exposed skin in cold, windy weather is most vulnerable to frostbite. But frostbite can occur on skin covered by gloves or other clothing.

Causes:

Frostbite occurs when skin and underlying tissues freeze. The most common cause of frostbite is exposure to cold-weather conditions. But it can also be caused by direct contact with ice, frozen metal, or very cold liquids.

Specific conditions that lead to frostbite include:

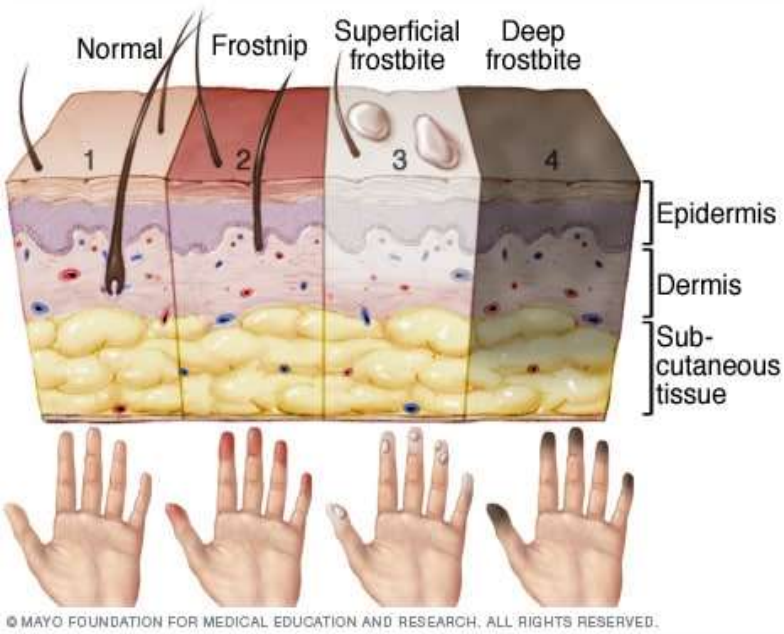
- Wearing clothing that isn't suitable for the conditions— for example, it doesn't protect against cold, windy or wet weather or it's too tight.
- Staying out in the cold and wind too long. Risk increases as air temperature falls below 5 F (minus 15 C), even with low wind speeds. In wind chill of minus 16.6 F (minus 27 C), frostbite can occur on exposed skin in less than 30 minutes.
- Touching materials such as ice, cold packs, or frozen metal.

Risk factors

The following factors increase the risk of frostbite:

- Medical conditions that affect your ability to feel or respond to cold, such as dehydration, excessive sweating, exhaustion, diabetes and poor blood flow in limbs
- Alcohol or drug abuse
- Smoking
- Fear, panic or mental illness, if it inhibits good judgment or hampers ability to respond to cold
- Previous frostbite or cold injury
- Being an infant or older adult, both of whom may have a harder time producing and retaining body heat
- Being at high altitude, which reduces the oxygen supply to skin

Symptoms


Normal
Frostnip
Superficial frostbite
Deep frostbite
1
2
3
4
Epidermis
Dermis
Sub-cutaneous tissue
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FrostnipOpen pop-up dialog box

Signs and symptoms of frostbite include:

- At first, cold skin and a prickling feeling
- Numbness
- Red, white, bluish-white or grayish-yellow skin
- Hard or waxy-looking skin
- Clumsiness due to joint and muscle stiffness
- Blistering after rewarming, in severe cases

Frostbite is most common on the fingers, toes, nose, ears, cheeks and chin. Because of skin numbness.

Frostbite occurs in several stages:

- **Frostnip.** Frostnip is a mild form of frostbite. Continued exposure leads to numbness in the affected area. As skin warms, client may feel pain and tingling. Frostnip doesn't permanently damage the skin.
- **Superficial frostbite.** Superficial frostbite appears as reddened skin that turns white or pale. Skin may begin to feel warm — a sign of serious skin involvement. If client treat frostbite with rewarming at this stage, the surface of skin may appear mottled. And client may notice stinging, burning and swelling. A fluid-filled blister may appear 12 to 36 hours after rewarming the skin.
- **Deep (severe) frostbite.** As frostbite progresses, it affects all layers of the skin, including the tissues that lie below. Skin turns white or bluish grey and client may experience numbness, losing all sensation of cold, pain or discomfort in the affected area. Joints or muscles may no longer work. Large blisters will form 24 to 48 hours after rewarming. Afterward, the area turns black and hard as the tissue dies.

Diagnosis:

- History collection and physical examination
- X-ray, a bone scan or an MRI

Complications:

Complications of frostbite include:

- Increased sensitivity to cold
- Increased risk of developing frostbite again
- Long-term numbness in the affected area
- Excessive sweating (hyperhidrosis)
- Changes in skin colour
- Changes in or loss of nails
- Joint stiffness (frostbite arthritis)
- Growth defects in children if frostbite damages a bone's growth plate
- Infection

- Tetanus
- Gangrene — decay and death of tissue resulting from an interruption of blood flow to the affected area — which can result in amputation
- Hypothermia

Treatment

Minor frostbite can be treated at home with basic first-aid measures. For all other frostbite, after appropriate first aid and assessment for hypothermia, treatment may involve rewarming, medications, wound care, surgery, and various therapies, depending on the severity of injury.

- **Rewarming of the skin:** rewarm the area using a warm-water bath for 15 to 30 minutes. The skin may turn soft and look red or purple.
- **Oral pain medicine.** Because the rewarming process can be painful.
- **Protecting the injury:** loosely wrap the area with sterile sheets, towels or dressings to protect the skin.
- **Removal of damaged tissue (debridement):** frostbitten skin needs to be free of damaged, dead or infected tissue.
- **Whirlpool therapy or physical therapy.** Soaking in a whirlpool bath (hydrotherapy) can aid healing by keeping skin clean and naturally removing dead tissue.
- **Infection-fighting drugs.** If skin or blisters appear infected, use oral antibiotics.
- **Clot-busting drugs:** Intravenous injection (IV) of a drug that helps restore blood flow (thrombolytic), such as tissue plasminogen activator (TPA). Studies of people with severe frostbite show that TPA lowers the risk of amputation. But these drugs can cause serious bleeding and are typically used only in the most serious situations and within 24 hours of exposure.
- **Wound care.** A variety of wound care techniques may be used, depending on the extent of injury.
- **Surgery.** People who have experienced severe frostbite may in time need surgery or amputation to remove dead or decaying tissue.

- **Hyperbaric oxygen therapy.** Hyperbaric oxygen therapy involves breathing pure oxygen in a pressurized room.

Prevention

Frostbite can be prevented. Here are tips to help stay safe and warm.

- Limit time spending time in outdoors in cold climate.
- Dress in several layers of loose, warm clothing.
- Wear a hat or headband that fully covers your ears.
- Wear mittens rather than gloves.
- Wear socks and sock liners that fit well, wick moisture and provide insulation.
- Watch for signs of frostbite.
- Don't drink alcohol if the person plan to be outdoors in cold weather.
- Eat well-balanced meals and stay hydrated.

13. **Heat stroke:** Heatstroke is a condition caused by body overheating, usually as a result of prolonged exposure to or physical exertion in high temperatures. This most serious form of heat injury, heatstroke, can occur if body temperature rises to 104 F (40 C) or higher.

Causes

Heatstroke can occur as a result of:

- Exposure to a hot environment. In a type of heatstroke, called non-exertional (classic) heatstroke, being in a hot environment leads to a rise in core body temperature. This type of heatstroke typically occurs after exposure to hot, humid weather, especially for prolonged periods. It occurs most often in older adults and in people with chronic illness.

- Strenuous activity. Exertional heatstroke is caused by an increase in core body temperature brought on by intense physical activity in hot weather. Anyone exercising or working in hot weather can get exertional heatstroke.

- Wearing excess clothing that prevents sweat from evaporating easily and cooling body
- Drinking alcohol, which can affect body's ability to regulate temperature
- Becoming dehydrated by not drinking enough water to replenish fluids lost through sweating

Risk factors

Anyone can develop heatstroke, but several factors increase your risk:

- Age: ability to cope with extreme heat depends on the strength of central nervous system. In the very young, the central nervous system is not fully developed, and in adults over 65, the central nervous system begins to deteriorate, which makes body less able to cope with changes in body temperature. Both age groups usually have difficulty remaining hydrated, which also increases risk.
- Exertion in hot weather. Military training and participating in sports, such as football or long-distance running events, in hot weather are among the situations that can lead to heatstroke.
- Sudden exposure to hot weather.
- A lack of air conditioning.
- Certain medications. Some medications affect body's ability to stay hydrated and respond to heat. Be especially careful in hot weather if the person takes medications that narrow blood vessels (vasoconstrictors), regulate blood pressure by blocking adrenaline (beta blockers), rid body of sodium and water (diuretics), or reduce psychiatric symptoms (antidepressants or antipsychotics).

  Stimulants for attention-deficit/hyperactivity disorder (ADHD) and illegal stimulants such as amphetamines and cocaine also make more vulnerable to heatstroke.

- Certain health conditions. Certain chronic illnesses, such as heart or lung disease, might increase risk of heatstroke. So can being obese, being sedentary and having a history of previous heatstroke.

Symptoms

Heatstroke signs and symptoms include:

- High body temperature. A core body temperature of 104 F (40 C) or higher, obtained with a rectal thermometer, is the main sign of heatstroke.
- Altered mental state or behavior. Confusion, agitation, slurred speech, irritability, delirium, seizures and coma can all result from heatstroke.
- Alteration in sweating. In heatstroke brought on by hot weather, skin will feel hot and dry to the touch.
- Nausea and vomiting.
- Flushed skin
- Rapid breathing.
- Racing heart rate.
- Headache.

Diagnosis

It's usually apparent to doctors if you have heatstroke, but laboratory tests can confirm the diagnosis, rule out other causes for your symptoms and assess organ damage. These tests include:

- Rectal temperature to check core body temperature. A rectal temperature is the most accurate way of determining core body temperature and is more accurate than mouth or forehead temperatures.
- A blood test to check blood sodium or potassium and the content of gases in blood to see if there's been damage to central nervous system.

- A urine test to check the colour of urine, because it's usually darker if have a heat-related condition, and to check kidney function, which can be affected by heatstroke.
- Muscle function tests to check for serious damage to your muscle tissue (rhabdomyolysis).
- X-rays and other imaging tests to check for damage to your internal organs.

Complications

Heatstroke can result in a number of complications, depending on how long the body temperature is high. Severe complications include:

- Vital organ damage. Without a quick response to lower body temperature, heatstroke can cause brain or other vital organs to swell, possibly resulting in permanent damage.
- Death. Without prompt and adequate treatment, heatstroke can be fatal.

Treatment

Heatstroke treatment centers on cooling body to a normal temperature to prevent or reduce damage to brain and vital organs. Immerse in cold water. A bath of cold or ice water has been proved to be the most effective way of quickly lowering your core body temperature. The quicker can receive cold water immersion, the less risk of death and organ damage.

- Use evaporation cooling techniques. If cold water immersion is unavailable, health care workers may try to lower body temperature using an evaporation method.
- Pack with ice and cooling blankets. Another method is to wrap in a special cooling blanket and apply ice packs to groin, neck, back and armpits to lower temperature.
- Give medications to stop shivering. If treatments to lower body temperature

Prevention

Heatstroke is predictable and preventable. Take these steps to prevent heatstroke during hot weather:

- Wear loosefitting, lightweight clothing. Wearing excess clothing or clothing that fits tightly won't allow body to cool properly.
- Protect against sunburn. Sunburn affects body's ability to cool itself, so protect outdoors with a wide-brimmed hat and sunglasses and use a broad-spectrum sunscreen with an SPF of at least 15.
- Drink plenty of fluids. Staying hydrated will help body sweat and maintain a normal body temperature.
- Take extra precautions with certain medications. Be on the lookout for heat-related problems if you take medications that can affect body's ability to stay hydrated and dissipate heat.
- Never leave anyone in a parked car. This is a common cause of heat-related deaths in children. When parked in the sun, the temperature in your car can rise 20 degrees F (more than 6.7 C) in 10 minutes.

  It's not safe to leave a person in a parked car in warm or hot weather, even if the windows are cracked or the car is in shade. When car is parked, keep it locked to prevent a child from getting inside.
- Take it easy during the hottest parts of the day. If the person avoids strenuous activity in hot weather, drink fluids and rest frequently in a cool spot.

14. **Shock: Shock** is a life-threatening condition that occurs when the body is not getting enough blood flow. Lack of blood flow means the cells and organs do not get enough oxygen and nutrients to function properly. Many organs can be damaged as a result. **Shock** requires immediate treatment and can get worse very rapidly.

Causes:

- severe allergic reaction
- significant blood loss
- heart failure

- blood infections
- dehydration
- poisoning
- burns

Types:

- **Hypovolemic shock** : Hypovolemic shock is an emergency condition in which severe blood or other fluid loss makes the heart unable to pump enough blood to the body. This type of shock can cause many organs to stop working.

Or

A condition in which the liquid portion of the blood (plasma) is too low.

Causes: Blood loss can be due to:

- Bleeding from cuts
- Bleeding from other injuries
- Internal bleeding, such as in the gastrointestinal tract

The amount of circulating blood in body also may drop when the person lose too much body fluid from other causes. This can be due to:

- Burns
- Diarrhoea
- Excessive perspiration
- Vomiting

Symptoms: Symptoms may include:

- Anxiety or agitation
- Cool, clammy skin
- Confusion
- Decreased or no urine output
- Generalized weakness
- Pale skin color (pallor)
- Rapid breathing
- Sweating, moist skin
- Unconsciousness (lack of responsiveness)

Diagnosis:

- ✓ History collection and physical examination
- ✓ Blood test
- ✓ CT scan, ultrasound, or x-ray of suspected areas
- ✓ Echocardiogram - sound wave test of heart structure and function
- ✓ Electrocardiogram
- ✓ Endoscopy - tube placed in the mouth to the stomach (upper endoscopy) or colonoscopy

Complications:

- ✓ Dehydration
- ✓ Shock, death

Medical management:

- ✓ IV fluids, ORS.

- **Cardiogenic shock**: Cardiogenic shock is a life-threatening condition in which heart suddenly can't pump enough blood to meet body's needs. The condition is most often caused by a severe heart attack, but not everyone who has a heart attack has cardiogenic shock.

Causes:

- Inflammation of the heart muscle (myocarditis)
- Infection of the heart valves (endocarditis)
- Weakened heart from any cause
- Drug overdoses or poisoning with substances

Risk factors

- Are older
- Have a history of heart failure or heart attack
- Have blockages (coronary artery disease) in several heart's main arteries

- Have diabetes or high blood pressure

Signs and symptoms:

- ✓ Pressure, fullness,or a squeezing pain in the center of chest that lasts for more than a few minutes
- ✓ Pain spreading to your shoulder, one or both of arms, back, or even teeth and jaw
- ✓ Increasing episodes of chest pain
- ✓ Shortness of breath
- ✓ Sweating
- ✓ Light-headedness or sudden dizziness
- ✓ Nausea and vomiting

Diagnostic evaluation:

- ✓ History collection and physical examination
- ✓ Blood test
- ✓ x-ray
- ✓ Echocardiogram - sound wave test of heart structure and function
- ✓ Electrocardiogram

Complications: cardiogenic shock can lead to death

Medical management: anti-platelet drugs, analgesics, anti-anginal drugs.

Surgical management: CABG

- **SEPTIC SHOCK:** A widespread infection causing organ failure and dangerously low blood pressure.

Causes: Sepsis commonly originates from:

- abdominal or digestive system infections
- lung infections like pneumonia
- urinary tract infection
- reproductive system infection

signs and symptoms:

- ✓ fever usually higher than 101˚F (38˚C)
- ✓ low body temperature (hypothermia)
- ✓ fast heart rate
- ✓ rapid breathing, or more than 20 breaths per minute

- ✓ Severe sepsis is defined as sepsis with evidence of organ damage that usually affects the kidneys, heart, lungs, or brain. Symptoms of severe sepsis include:

- ✓ noticeably lower amounts of urine
- ✓ acute confusion
- ✓ dizziness
- ✓ severe problems breathing
- ✓ bluish discoloration of the digits or lips (cyanosis)

diagnostic evaluation:

- ✓ History collection and physical examination
- ✓ Blood test
- ✓ x-ray
- ✓ Echocardiogram - sound wave test of heart structure and function
- ✓ Electrocardiogram

Complications: death

Medical management: Antibiotics, anti-pyrectics**.**

- **Neurogenic shock:** Neurogenic shock is a devastating consequence of spinal cord injury (SCI) that can manifest as hypotension, bradyarrhythmia, and temperature dysregulation. It is associated with cervical and high thoracic spine injury.

Causes:

- ✓ spinal cord injury, usually secondary to trauma.

- ✓ spinal anaesthesia, Guillain-Barre syndrome, autonomic nervous system toxins, transverse myelitis, and other neuropathies.

Other causes of neurogenic shock include:

- ✓ car accidents that cause central nervous system damage or spinal cord injury
- ✓ sport injuries causing trauma to the spine
- ✓ gunshot wounds to the spine
- ✓ medications that affect the autonomic nervous system, which regulates breathing and other automatic bodily functions
- ✓ improper administration of anaesthesia to the spinal cord

Signs and symptoms:

- ✓ dizziness
- ✓ nausea
- ✓ vomiting
- ✓ blank stares
- ✓ fainting
- ✓ increased sweating
- ✓ anxiety
- ✓ pale skin
- ✓ difficulty breathing
- ✓ chest pain
- ✓ weakness from irregular blood circulation
- ✓ bradycardia, or a slower heart rhythm
- ✓ faint pulse
- ✓ cyanosis, or discolored lips and fingers
- ✓ hypothermia, or decreased body temperature

diagnostic evaluation:

- ✓ History collection and physical examination
- ✓ Blood test
- ✓ x-ray
- ✓ Echocardiogram - sound wave test of heart structure and function
- ✓ Electrocardiogram
- ✓ CT scan, MRI

Complications: Paralysis, death.

Medical management:

Initial management of neurogenic shock is focused on hemodynamic stabilization. Hypotension should be treated first to prevent secondary injury. The first-line treatment for hypotension is intravenous fluid resuscitation.

Treatment for bradycardia is atropine and glycopyrrolate to oppose vagal tone, especially before suctioning. Isoproterenol is considered for a pure chronotropic effect. Methylxanthines such as theophylline and aminophylline have been cited for refractory cases of bradycardia.

surgical intervention may be required for decompression of spinal injury and improvement of neurogenic shock.

First, immobilize to prevent further damage. Then fluids intravenously to regulate blood pressure. If blood pressure is too low, give vasopressors, or medication that helps to tighten blood vessels and raise pressure. Some of the most common vasopressors include:

- ✓ norepinephrine
- ✓ epinephrine
- ✓ dopamine
- ✓ Vasopressin

- **Anaphylactic shock**: A severe, potentially life-threatening allergic reaction.

Causes: Common triggers for anaphylaxis include:

- certain medications such as penicillin
- insect stings
- foods such as:
    - tree nuts
    - shellfish
    - milk
    - eggs
    - agents used in immunotherapy
    - latex

Symptoms of anaphylaxis include:

- skin reactions such as hives, flushed skin, or paleness
- suddenly feeling too warm
- feeling like you have a lump in your throat or difficulty swallowing
- nausea, vomiting, or diarrhoea
- abdominal pain
- a weak and rapid pulse
- runny nose and sneezing
- swollen tongue or lips
- wheezing or difficulty breathing
- a sense that something is wrong with your body
- tingling hands, feet, mouth, or scalp

Complications: This can contribute to potential complications such as:

- brain damage
- kidney failure
- cardiogenic shock, a condition that causes heart to not pump enough blood to body

- arrhythmias, a heartbeat that is either too fast or too slow
- heart attacks
- death

medical management: If someone appears to be going into anaphylactic shock, call ambulance and then:

- Get them into a comfortable position and elevate their legs. This keeps blood flowing to the vital organs.
- If they have an Epinephrine, administer it immediately.
- Give them CPR if they aren't breathing until the emergency medical team arrives.

- first step for treating anaphylactic shock will likely be injecting epinephrine (adrenaline) immediately. This can reduce the severity of the allergic reaction.
- At the hospital, receive more epinephrine intravenously (through an IV). Client may also receive glucocorticoid and antihistamines intravenously. These medications help to reduce inflammation in the air passages, improving ability to breathe.
- beta-agonists such as albuterol to make breathing easier. supplemental oxygen to help body get the oxygen it needs.