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SUBJECT ---------- FIRST – AID

(Note : The study material has been composed by our academic cell under the supervision of the Director of the college. The concerned students are hereby advised to study the same thoroughly in addition to their prescribed syllabus , text books/ references and the notes provided by your concerned tutors.)

CHAPTER ---------- 01 (INTRODUCTION)

Q1. Definition of first aid?

First aid is an emergency care given immediately to an injured person. The purpose of first aid is to minimize injury and future disability. In serious cases, first aid may be necessary to keep the victim alive.

(Or)

First aid is the first and immediate assistance given to any person suffering from either a minor or serious illness or injury.

Q2. Meaning of first-aid?

Meaning of first-aid is = First Investigation Relief Symptom Treatment Arrangement Immediately Disposal.

AIMS OF FIRST AID

The 5 main aims of first aid are:-

- Preserve life
- Prevent the escalation of the illness or injury
- Promote recovery
- Pain relief
- Protect the unconsciousness
  - ❖ **Preserve Life: -** Saving lives is the main aim of first aid. To prevent further harm, the person who has experienced the injury must be kept stable, and their condition not deteriorates before medical services arrive.

- **Prevent the Escalation:** - The efforts of the first aiders are directed towards prolonging the time until the ambulance service arrives e.g. if the patient is bleeding profusely, the first aider will not stitch the wound, but they will do their best to stop bleeding until the ambulance arrives.
    1. To ensure that injuries can be efficiently and promptly dealt with before a trained medical personal.
    2. It is affordable to people in order to provide help during various emergency situations.

PRINCIPLES OF FIRS AID:-

- Calm the situation
- Act as a first aider
- Ensure the condition of the ill or injured person
- Avoid infection
- Give psychological first aid
- Recognize the emergency
- Call 911 if you think you should bring help to the victim
- Prioritize the causalities
- Prevent further harm
- Check ABC

- **Promote recovery: -** First aid also involves trying to start the recovery process from the illness or injury e.g. applying a bandage to a wound.

- **Pain relief: -** RICE – Rest, ice, compression and evaluation is the best first aid strategy for painful injuries to muscles, joints and other injuries.

- **Protect the unconscious:** - Call 911 or tell someone for help, check the person's airway, breathing and pulse frequently, if necessary begin CPR.

IMPORTANCE OF FIRST AID:-

- First aid provides quick medical treatment until professional assistance arrives.
- First aid gives us sure that the right methods of administering medical assistance are provided.
- Knowledge in first aid also benefits the individual themselves
- Blizzards (serve snow storm with high winds).
- Chemical spills
- Dam failure
- Droughts
- Extreme heat waves

PRINCIPLES OF EMERGRNCY PLAN:-

The fundamental principles of emergency management are based on four phase: - Mitigation, Preparedness, Response and Recovery.

1. **Mitigation:-**a. Lessen the impact of an emergency before it strikes.
   b. Activities that reduce or eliminate a hazard.
   c. Risk reduction e.g. public awareness, public education

2. **Preparedness:** Activities undertaken to handle a disaster / emergency when it strikes.

CONCEPT OF EMERGENCY:-

DEFINITION: - An emergency is a situation that poses an immediate risk to health, life, property or environment.

Objectives of Emergency:-

1. Planning
2. Safeguard and make available vital materials
3. Supplies and equipment to ensure the safety and recovery of records from predictable disasters
4. Reduce the risk of disasters caused by human error, deliberate destruction and building or equipment failures.
5. Be better prepared to recover from a major natural catastrophe.

TYPES OF EMERGENCY:-

a. Earthquake
b. Fire
c. Floods
d. Know evacuation shelters
e. Emergency communication plan
f. Preventive measures to prevent spread of diseases

Response:-

1. Search and rescue
2. Clearing debris
3. Feeding and sheltering victims
4. Activities a hospital, health care system, health agency immediately before, during and after a disaster or emergency occurs.

Recovery:-

1. Getting a community back to its pre - disaster status

2. Care and shelter
3. Damage assessments
4. Funding assistance

CHAPTER ---02

PREPARATION OF FIRST AID KIT

First aid kits of different sizes can be brought at chemists shop. Alternatively, individual items may be brought and kept in a compact metal box. Supplies should not be kept in different places it is important that everything be ready for immediate use:

Following items should be included in the first aid kit:-

1. Gauze dressing 5-10 cm square in sterile packages.
2. Rolls of gauze bandages 5-8 cm wide
3. Adhesive bandages in assorted sizes
4. Roll of absorbent cotton
5. Adhesive tape
6. Mild antiseptic
7. Scissors, tweezers, safety pins
8. Tube of petroleum jelly
9. Paper and pencil to record clues including patients pulse rate
10. Tongue depressors
11. Airway
12. Splints
13. Thermometer
14. Rubber catheter, tourniquet
15. Mackintosh
16. Match box
17. Gloves

Gauze dressing and bandages come in sterile packages. Supplies left over from opened packages do not remain sterile and should be replaced. Items other than those mentioned above may be added to the kits e.g. baking soda, salt, potassium per magnate etc.

In an emergency one should not hesitate to use non-sterile supplies such as ironed sheets, torn strips and pads made from clean clothing etc.

Drugs to be included are:-

NS, 5% dextrose in water, 25% dentrose in water, adrenaline, atropine, diazepam, promethazine, 2% lignocane, distilled water for injection etc.

Disinfectants and antiseptics used are:-

- **Dettol ----** To clean wounds, to sterile instruments that cannot be sterilized by heat.
- **Savlon:** - To wash hospital equipments, disinfectant soiled liner and spray pts room and to clean wounds.
- **Potassium permanganate:** - Used for throat gargles, bladder wash, use of snake bite and used for purification of water.
- **Spirit:** - Used for disinfection of skin, equipments and ampoules should not be applied to clean wounds or raw surface because it removes coagulum formed on the raw area.
- **Boric acid**: - Used in solution form as mouthwash and for irrigation of urinary bladder, skin and mucosal inflammation like eczema burns etc.
- **Iodine:** - Used in the form of tincture 2% for disinfection of skin, treatment of wound etc.

Dressing: - It is the protective covering of a wound. This can be done by some medicine or without medicine for the soakage of drained material.

Purposes:-

- To prevent infection
- To prevent further complications
- To absorb any blood or discharge
- To promote healing

Types of dressing:-

1. **Medicated dressing: -** This type of dressing contains medicine on it to prevent any multiplication of microorganisms on the wound and to cover adhesive material on it. It is the dressing which is ready to use at any time. These can be also called as prepared dressing.
2. **Non-medicated dressing: -** This type of dressing does not have any medicine on it. These can be used to cover up the large wound. These may include gauze piece, clean handkerchief etc.
3. **Dry dressing: -** In these types of dressing dry clean absorbent material is used to cover the wound. They may be medicated or non-medicated.
4. **Wet dressing: -** If the wound is infected, wet dressings are often used to soften the wound and discharge.
5. **Pressure dressing: -** This dressing is done to apply pressure on any area that is bleeding so as to control bleeding.

BANDAGING:-

Points to remember

- The bandage should be done in neat, clean manner and it should be dry.
- Width and length of the bandage as given in table.
- Bandage should not be too tight and not too loose.
- Pressure bandage should be able to stop bleeding.
- The bandage should cover completely the dressing material.
- Put some cotton wool on the part to be bandaged so that the bandage does not slip.
- Hold the head of bandage in right hand.
- Don't tie or put knot over the wound.
- Instruct the patient how to prevent bandage from soiling.
- Avoid covering the nail to check the circulation of the area.
- Secure the bandage properly with adhesive material.
- Never use wrinkled bandage.
- Listen to all the complains of patients while bandaging.

General principles of first aid:-

- Select a bandage of proper size and suitable material.
- Put the point in a comfortable position.
- Support the injured area, while bandage.
- If a joint is involved, flex it slightly.
- Face the patient while applying the bandage, except when applying it on the head.
- Pad boney prominences.
- Hold the roll of the bandage in the right hand when applying bandage the left side and in the left hand when applying on the right side.
- Hold the bandage with the roll uppermost and apply the outer surface of the skin, unrolling a few centimeters of the bandage at a time.
- Put cotton wool on the part to be bandaged so that the bandage does not slip or cause cutting into the skin underneath.
- Bandage from below upward and from within outward.
- Hold the end of the bandage over the outer aspect of the injured area and wind the bandage around the part twice to fix it.

Types of Bandaging:-

According to size and shape of bandage:-

1. Roller bandages
2. Binders
3. Many tailed bandages
4. T- bandages
5. Tubular gauze

1. **Circular bandages: -** All the turns of the bandage are applied on the same place and they completely overlap each other. Circular bandages are most commonly applied on the wrist, the lower third of the leg, and on the abdomen, neck and forehead.
2. **Spiral bandage: -** Is applied when considerable area of the body should be bandaged. The turns of the bandage are passed somewhat obliquely from bottom to top and each turn overlaps two-thirds of the preceding one. Bandaging is usually started with several circular fixing turns. A spiral bandage is easily applied on parts of the limbs of uniform thickness.
3. **Figure of eight bandage: -** The turns cross one another in figure of eight. It is convenient dressing for parts of the body that have complex shapes such as, ankles, shoulder, wrists. There are 3 types of figure of eight bandage:
    - Spica bandages
    - Convergent bandages
    - Divergent bandages
4. **Tubular net bandages: -** Elasticized tubular net bandages for fixing dressing on any part of the body are now available. An elastic bandage is a net tube (sleeve) made from elastic, synthetic and cotton threads.

CPR (CARDIOPULMONARY RESUSCITATION)

DEFINITION: - It is an emergency life saving procedure that is done when someone's breathing or heartbeat has stopped.

(Or)

CPR is an emergency procedure that combines chest compressions often with artificial ventilation in an effort to manually preserve intact brain function until further measures are taken to restore spontaneous blood circulation and breathing in a person who is in cardiac arrest.

INDICATIONS:-

- Cardiac arrest
- Respiratory arrest and poisoning
- Accident or injury
- Electric shock
- Foreign body airway obstruction
- Drug reaction or drug overdose

Assessment for (CPR)

- Apnea
- Absence of pulse
- Dilated pupil
- Unconsciousness
- Cyanosis

Sequence of CPR for health care provider:-

1. Determine the unconsciousness
2. Assess pulse for 5-10 sec.

   Adult ------- carotid

   Child -------- femoral

   Infaint --------- femoral/bronchial

3. Perform chest compression

Compression method:

Adult ------- two hand

Child ---- same as adult

Infaint -------- two finger/two thumb

Compression location:

Adult ------- lower half of sternum, between nipples, centre of heart

Child --------- same

Infaint ------- just below nipple

Compression depth:

Adult ---- 2 inch

Child ---- 2 inch

Infant ----- 1.5 inch

Compression rate -------- 100 /min (all)

Compression and ventilation ratio (according to research)

	Adult	Child	Infant
1 Rescuer	30:2	30:2	30:2
2 Rescuer	30:2	15:2	15:2

4. Open airway:-
   - Head tilt-chin lift method
   - Jaw thrust maneuver

5. Check breath and deliver breath:-
    - Pinch the nostrils and give mouth to mouth breathing
    - Each rescue breathing deliver over 1 second with visible chest rise.
    - One breath (2-3 second after) breath rate 20-30 breath/min (according to AHA 2020)
6. Activate emergency medical services system:

Adult: phone first and then give 5 cycle of CPR at ratio 30:2 and then call last.

Defibrillation: - Is a procedure used to treat life threatening conditions that affect the rhythm of the heart such as cardiac arrhythmia, ventricular fibrillation and ventricular tachycardia. The machine used to deliver this therapeutic shock to the heart is called defibrillation.

Defibrillation energy charge:

Biphasic ----- 120-200 joules (90%)

Monophosic ------ 360 joules (60%)

Call three times and no one is touching the bed and before shock shut the oxygen supply.

Placement of paddle:

1. Base of heart
2. Apex of heart

Pressure of paddle: 25lb

Complication of CPR:-

- Rib fracture
- Flail chest
- Lung injury or lung contusion
- Abdominal organs injury
- Vomiting and aspirations
- Pneumothorax

CHAPTER ------ 03 (FIRST AID IN EMERGENCIES)

ASPHYXIA: Asphyxia is one of the respiratory problems where lungs do not get sufficient supply of air from breathing.

Signs and symptoms:-

- Blue discoloration of face
- Blue discoloration of tongue and lips

- Inability to speak
- Unconsciousness

First aid for asphyxia:

- Remove the casualty from the affected situation
- First try the Heimlich maneuver, grasping the victim from behind with hands linked in front and compressing the abdomen just below the ribs.
- Encourage victim to cough up foreign objects in throat, as a last resort, wrap victim between shoulder blades to dislodge object.
- For asphyxia caused by gas or fumes, remove victim to a clear atmosphere- use artificial respiration.
- Open the airway and begin to give mouth to mouth ventilation immediately.
- Place the patient in a recovery position.
- Apply water over the face; make the patient to drink a sip of water.
- Sent the casualty to hospital.

DROWNING;-Drowning is the result of complete immersion of the nose and mouth (or any other liquid). Water enters the windpipe and lungs, logging the lungs completely.

Etiology:-

- Most drowning happens in residential swimming pools
- Bath tubs
- Toilets
- Buckets
- Open water sites such as lakes, rivers and oceans are more likely to be the site of accident among teenagers.

Epidemiology:-

- Childrens between 1-4 years are mostly affected
- Teenager's males are mostly affected than females.

Pathophysiology:- When drowning occur--- drowning victims becomes panic, struggle and attempt to hold their breath--- victim begin to swallow water --- vomited or aspirated --- laryngospasm --- seizures, hypoxia, death.

Manifestations: - The child's condition after near drowning varies with the extent of injury, five factors contribute to the child's eventual prognosis:-

1. Age
2. Submersion time and water temperature

3. Elapsed time before resuscitation efforts are instituted
4. Arterial blood gas measurements (especially PH)

Signs and symptoms:-

- 75% of kids who develop
- Cyanosis
- Coughing and the production of frothy pink sputum
- Tachypnea, tachycardia
- Low grade fever
- Coma to agitated alertness
- Rales, bronchi and less often wheezes
- Do not move the casualty un necessarily in case of spiral injury
- Do not destroy or interfere with any material such as knotted rope, that police may need as evidence
- Lay the casualty on the floor
- Open the airway and check breathing
- If she/he is not breathing be prepare to resuscitate
- Refer casualty to the hospital
- If he/she is breathing, place her in a recovery position

FALLS: - A general term used to describe any case that has resulted in an injury from falling.

Causes:-

Mental health ---- Alzheimer's disease

Confusion

Psychosis

Medication side effects

Vision defects ----- cataract

Reduced visual field activity

Musculoskeletal ----- Arthritis

Stiffness of joints

Weak muscles

Immobility

Neurological defects ----- epilepsy

Stroke

Environmental factors ---- lightening

Stairs

Floors

Steps

First aid tips for relatively falls and the person in responding well:-

- Do not rush to move the person
- Try to determine the reason of the fall, intensity and location of the pain
- Carefully and slowly lift the person into a sitting position, but watch for signs a sitting position, but watch for signs of dizziness or discomfort
- Attend to any cuts, bruises or sprains
- If the person was hit on the head, monitor for signs of concussion for the next 24 hours.
- Refer to hospital for further treatment

POISONING

Poison is a substance that causes damage to living tissues and has an injurious of fatal effect on the body, whether it is in ingested, inhaled or absorbed or injected through the skin.

What causes poisoning:-

- Household products and personal care products like nail polish remover and mouthwash, which is harmful to children
- Cleaning products and detergents
- Pesticides and bug spray
- Point thinner
- Lawn chemicals, such as herbicides, fertilizers and fungicides
- Metals such as lead

Signs and symptoms of poisoning may include:-

- Burns or redness around the mouth and lips
- Breath that smells like chemicals
- Vomiting
- Difficulty breathing
- Drowsiness

- Confusion or other altered mental status
- Feeling and being sick
- Diarrhea
- Stomach pain
- Chills
- Loss of appetite
- Headache
- High temperature 38 degree Celsius (100.4 degree Fahrenheit) or above

Management:-

Primary management:-

- Seek immediate medical help
- Try and identify the poison if possible
- Check for signs like burns around mouth, breathing difficulty or vomiting
- Induce vomiting
- In case of convulsions, protect the person from self injury
- If the vomit falls on the skin, wash it thoroughly
- Position the victim on the left till medical help arrives

For inhalation poisoning:-

- Seek immediate emergency help
- Get help before you attempt to rescue others
- Hold wet cloth to cover your nose and mouth
- Open all the doors and windows
- Take deep breaths before you begin the rescue
- Avoid lighting a match
- Check the patients breathing
- Do a CPR, if necessary

Detovication: - Primary detovication by ipecac induced emesis or gastric lavage. In mild to moderate poisoning administration of activated charcoal alone without gastric emptying is often more effective because it binds toxin promptly.

SPRAINS AND STRAINS

Definition:-

Sprains: - sprain involves a stretch or a partial tear of ligaments (which connects two bones).

Strains: - strains are injuries to muscle or tendons (which connect muscle to bone) due to overstretching.

Causes:-

- By falls
- Direct blows (twist)
- Crust injury
- Motor vehicle collisions
- Sports injuries

Common sites:-

- Wrist
- Thumb
- Ankle

Clinical manifestations:-

- Pain
- Decreased function
- An acute strain may involve partial or complete rupture of muscles
- Swelling
- Tenderness
- Increased pain during few hours due to continued swelling
- Oedema
- Bruising
- Loss of function

Treatment for sprains:-

RICE THERAPY:-

R ---- Rest

I ----Ice

C --- Compression

E ---- Elevation

Rest -----

- Stop using injured part
- Use splint for injuries

Ice -----

- Apply ice packs
- Do not apply ice for longer than 15-30 minutes at a one time

Compression ----

- Use elasticized bandage
- Wrap injured part firmly
- Too tight compression may cause more swelling

Elevation ----

- Elevate legs above the level of head
- Decreases swelling and pain

FRACTURE

Definition: - A break in continuity of bones is called fracture. It may be done to excessive pressure on bone and bone is unable to absorb this pressure.

Types of fracture:-

1. Complete fracture
2. Incomplete fracture
3. Comminuted fracture
4. Closed fracture
5. Open fracture
6. Impacted fracture
7. Pathological fracture
   - **Complete fracture:** - it involves the entire section of the bone.
   - **Incomplete fracture: -** also called greenstick fracture, break occurs only through part of the cross section of the bone.
   - **Comminuted fracture: -** a break with several bone fragments.
   - **Closed fracture: -** it is also called simple fracture; it does not produce a break in skin.
   - **Open fracture: -** it is also called compound or complex fracture. A break in which the skin or mucus membrane wound extends to the fractured bone.
   - **Impacted fracture :-** when one bone impact to another bone.
   - **Pathological fracture: -** fracture occurs due to bone disease or without any other pressure e.g. osteoporosis.

Patterns of Fracture:-

- Greenstick fracture
- Oblique fracture

- Transverse fracture
- Spiral fracture
- Compression fracture

Clinical manifestations:-

- Pain
- Loss of function
- Deformity
- Shortening of the extremity
- Crepitus (abnormal mobility)
- Swelling
- Tenderness
- Localized edema
- Tenderness
- Ecchymosis (bruise mark on skin due to impaired muscles)
- Numbness
- If open fracture, there may be chance of hemorrhage that leads to shock.

Diagnosis:-

X-rays (anterior, posterior, lateral view)

Complications:-

- Muscle atrophy
- Loss of muscle strength
- Pressure sores at bone prominence
- Infection
- Shock
- Pulmonary embolism
- Fat embolism
- Bone union problem

Management:-

Emergency management: ---

- Check ABC of patient and also maintain it.
- Check vital signs
- Immediately after injury, immobilize the body part while the patient has to move.
- We should splint the fracture part.
- Support the fracture site.

- In an upper extremity injury, the arm may be bandaged to the chest, or an injured forearm may be placed in a sling.
- Cover the wound of an open fracture with a sterile dressing to prevent contaminating of deeper tissues.

Reduction of Fracture:-

a. **Closed Reduction: -** it is method of fracture realignment. It is performed by manually (by hands) apply a traction force to bone till end of the bone together.
b. **Open reduction: -** surgical placement of internal fixation devices e.g. metallic pins, wires, plates, rods.
c. **Traction reduction: -** the application of a pulling force, especially as a means of counteracting the nature of tension in the tissues surrounding a broken bone.

Nursing management:-

- Assess ABC of patient.
- Assess types, location and severity of fractured part.
- Observe condition of shock and hemorrhage.
- Assess patients requirements according to fracture.

BURNS: - Damage to the skin or deeper tissues caused by sun, hot liquids, fire, electricity (high voltage) or chemicals can cause burns in our body.

TYPES:-

1. **Electrical burns**
2. **Scald burns**
3. **Flame burns**
4. **Chemical burns**

1. **Electrical burns: -** an electrical burn is a skin burn that happens when electricity comes in contact with your body, it can travel through your body and damage tissues and other organs, this damage can be mild or severe, sometimes it can even cause death.

- Administer crystalloids
- Check vitals

- Control bleeding by surgical treatment (control of hemorrhage along with the general management of shock).
- Monitor B.P. every 30 minutes
- Assess skin color and temperature.
- Assess the level of consciousness (with the help of GCS scale)
- Watch for occurrence of any further bleeding or further complication for few hours.

According to degree or depth of burns:-

According to degree	According to depth
1,2,3,4 degree burns	depend upon which layer gets affected

- 1 degree covers epidermis, superficial burns
- 2 degree covers epidermis and dermis layer of skin
- 3&4 degree covers epidermis, dermis and hypodermis. Hypodermis involves muscles, nerves and even bones.

According to extend of burns: - it depends upon TBSA (total body surface area) by using formula.

According to rule of nine formulas:-

Anterior side of body	posterior side of body
Head = 4.5%	Head = 4.5%
Chest = 9%	
Abdomen = 9%	Back (whole) = 18%
Legs = rt. Leg 9%, left leg 9% =18	Legs =9+9 (rt. +lt. = 18)
Arms = Rt. 9%, left 9% = 18	Arms = 9+9 =18
Genetalia = 1%	

Total =100%

Scald burns: - A scald burn is caused due to any wet substance (hot liquid) which can cause the burn in the skin such as hot water, steam.

Flame burns: - when an individual is exposed to open fire is called as flame burn.

Chemical burns:- A chemical burn occur when living tissue is exposed to corrosive substance (any chemical) or a cytotoxic agents such as strong acid, oxidizer.

CLASSIFICATION OF BURNS:-

1. According to degree/depth of burns
2. According to extend of burns
3. According to severity of burns

MANAGEMENT

Prehospital management:-

- Priority is given to removing the person from the source of burn and stopping the burning process.
- If burn less than 10% TBSA, it may be covered with the cool water damp towel.
- Chemical burns are best treated by brushing solid particles of the skin followed by the lavage (washing) of water.
- Assess ABC.
- If the burn is more than 10% of TBSA it is not advisable to immerse body parts in cool water, leads to extensive heat loss, it is advised to shift the patient immediately to the emergency medical services.

Sign and symptoms:-

1 degree burns ----- skin becomes red and dry, and may swell and be painful to touch.

2 degree burns ---- blisters form, discharge clear fluid, skin appears wet and blotchy

3 and 4 degree burns ----- skin becomes darker and appear charred, underlying tissue may look white, very painful unless nerves are destroyed then it is painless.

Emergency Management: - It is otherwise called as resuscitation phase.

- This phase starts from time of burn to the 3 or more days.
- Monitor ABC.
- Fluid replacement to prevent burn shock or Hypovolemia shock.
- Insertion of IV cannula
- If full body burn then CVP line.
- Calerlation of fluid to be given by Parkland Formula (this formula recommends crystalloids first 24 hours and colloids next 24 hours)

- Initial 24 hours RL solutions (4ml/kg %) burn for adults and 3ml/kg/% burn for childrens.e.g. Miss ABC are having 10% burns and her body weight is 50kg then fluid to be given, 4x50x10 = 200ml crystalloids in first 24 hours, among 200ml 50% (1000ml) is given first 8 hours and 50% is given next 16 hours.
- Next 24 hours colloids given as 20-60% of calculated plasma volume. Glucose water is added in amounts of required to maintain a urinary output of 0.5 – 1 ml/ hour in adults and 1 ml/hour in childrens.
- Insertion of NG tube feeding.
- Monitor vital signs, o2 saturation
- ABG analysis.
- Pain relief (Iv analgesics Morphine)
- Wound care (cleaning and debris removal)
- Prevent tissue ischemia
- Control of infection follow standard protocols to prevent infection
- The entire burn patient should be isolated.

Nutritional therapy:-

- Burn patient needs adequate calories of protein to promote healing. So the patients are encouraged to eat high protein, carbohydrate, foods to meet increased calorie needs.
- Weight loss should not be more than 10% of pre body weight.

Skin grafting: - The surgical operation in which the piece of healthy skin is transplanted to a new site on patients body or to different individuals.

Types:-

1. Autologous
2. Isogenic
3. Allogenic
4. Xenogenic

a. **Autologous: -** The donor skin is taken from a different site on the same individual's body.
b. **Isogenic: -** the donor and receptant individuals are genetically identical.
c. **Allogenic: -** The donor and receptant are same species.

Acute Management:-

- Acute phase begins with mobilization of extra cellular fluid.
- In this phase the burn area are covered with skin grafting or the wound area are healed.
- This phase may take weeks or months.

Pain management: - Burn patients experience 2 types of pain:

1. Continuous background pain – that exists throughout day and night
2. Treatment induced pain e.g. dressing changes.

Pharmacological pain management: - IV infusion of morphine or hydro morphine will give relief from pain.

Non-pharmacological pain management: - Pain can also be managed such as hypxosis, meditation.

- The child is admitted to the hospital for the observation even if in stable condition after initial rescue and emergency treatment.

SHOCK: - Shock is a life threatening condition that occurs when the body is not getting enough blood flow. Lack of blood flow means cells and organs do not get enough 02 and nutrients to function properly, many organs can damage as a result of death in serious conditions.

ETIOLOGY:-

- Severe bleeding
- Severe burns
- Heart failure
- Heart attack
- Head or spinal injuries
- Severe allergic reactions
- Dehydration
- Electrocution
- Serious infections
- Extreme emotional reaction

CLASSIFICATION

- Hypovolemic shock
- Septic shock/ Endotoxic shock
- Cardiogenic shock
- Neurogenic shock

1. **Hypovolemic shock: -** It 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. Hypovolemic occur due to:
    - Hemorrhagic (blood loss)
    - Non-hemorrhagic (fluid loss)

2. **Septic shock/Endotoxic shock: -** Hypotension is due to sepsis resulting in de arrangements in cellular or organ system dysfunction. This is overwhelming infection of septic organism i.e. organ negative organism, these organisms contain endotoxin in their cells and trigger the body's immune system.

Management:-

Immediate management:-

- Shock continues to develop unless medical treatment began.
- Call medical emergency 108.
- Check responsiveness, normal breathing start resuscitate if possible.
- Stop bleeding.
- Care for life threatening condition.
- Lie victim on back and raise legs 6-12 inches above the ground level.
- Alert for vomiting (give side lying position).
- Maintain normal temperature.
- Refer hospital.

Hospital Management:-

- Maintain ABC

  Airway = o2

  Breathing = ventilation

  Circulation = two wide bore cannula to restore circulation rapidly

3. **Cardiogenic shock: -** it is also a serious condition that occurs when your heart can not pump enough blood and o2 to the brain, kidneys and other viral organs.
4. **Neurogenic shock/extra cardiac shock:** - Neurogenic shock is the result of auto immune dysfunction (a dysfunction of nerves) following spinal cord injury, usually secondary to trauma.

Sign and symptoms: - depends upon type of shock, commonly sign and symptoms are:-

Mild	Severe
Headache	cold or calm skin
Fatigue	pale skin
Nausea	rapid breathing
Prefuse sweating	rapid heart rate
Dizziness	confusion

Cyanosis

THERAPEUTIC MANAGEMENT

1. **Pre- hospital management**
2. **Hospital management**

a. Pre – hospital management:-

- Rescue the victim and remove from the water.
- Prompt initiation of CPR and activation of emergency medical system.
- Maintain adequate oxygenation and circulation minimize secondary organ damage and take proper precautions to stabilize cervical spino- injuries.
- The child's airway is opened, the nurse begin to suction, to remove mucus and fluid and delivers oxygen by mask or mask or by bag value mask.
- Over inflation of lungs must be avoided to prevent pneumothermia.
- Elevating the head of the bed to 30 degree may help lower intracranial pressure but should not be done in spinal injury.
- Intubation should be considered for unconscious child.
- A cardiac monitor is used for ongoing assessment for the heart rate and rhythm.
- Warm the child and remove the wet clothes.
- I/V line should be started immediately in critically ill children.

Hospital management:-

- Continue the pre-hospital goals of maintaining adequate oxygenation and circulation and initiates other treatment on the basis of laboratory and radiologic findings.
- Arterial blood gases may indicate the need to correct acidosis with sodium bicarbonate.
- Hypothermia is initiated of warm blankets, oxygen.
- Fluid and electrolyte correction can be instituted.