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FACULTY OF NURSING

RAMA UNIVERSITY

Emergency Nursing

Mr. M.Raghavendran M.Sc(N)
Professor
MSN Dept

Emergency Nursing

- Patients with life threatening or potentially life threatening problems arrive at the hospital through emergency department.
- Recognition of life threatening illness or injury is one of the most important aspects of emergency care. Before a diagnosis can be made recognition of dangerous clinical signs and symptoms with initiation of interventions to reverse or prevent a crisis is essential.

Definition

- According to Emergency Nurses Association “It involves the assessment, diagnosis and treatment of perceived, actual or potential, sudden or urgent, physical or psychosocial problems that are primarily episodic or acute.”

Triage

- It is a French word meaning “To Sort”, refers to the process of rapidly determining patient acuity. The triage process is based on the premise that patients who have a threat to life, vision or limb should be treated before other patients.

Triage Categories

- They separate patients according to severity of injury and use of color coded tagging system so that the triage category is immediately obvious.
- The North Atlantic Treaty Organization (NATO) triage system is one that is widely used.

Cont…

- RED [IMMEDIATE]: Injuries are life threatening but survival with minimal intervention.
- YELLOW [DELAYED]: Injuries core significant and require medical care but can wait hours without threat to life or limb.

Cont…

- GREEN [MINIMAL]: Injuries are minor and treatment can be delayed hours to days. Individuals should be moved away from triage.
- BLACK [EXPECTANT]: Injuries are extensive and chances of survival are unlikely even with definitive care.

Systematic Approach

- A systematic approach to the initial patient assessment decreases the time required to identify potential threats and minimizes at risk of overlooking a life threatening condition. Two systematic approaches the primary survey and a secondary survey were initially developed for use with the trauma patient.

Primary Survey

- *A: Airway with Cervical Spine Stabilization*
- *B: Breathing*
- *C: Circulation*
- *D: Disability*

A: Airway with Cervical Spine Stabilization

- ***Causes*:** saliva, bloody secretions, vomitus, laryngeal trauma, dentures, fractures and tongue fall back which can obstruct airway.
- ***Clinical Manifestation***: It includes dyspnea, inability to vocalize, presence of foreign body in the airway, trauma in the face and neck.

Cont…

Treatment: Jaw Thrust Maneuver

Suctioning or Removal of Foreign Bodies

Insertion of oro-pharyngeal or naso-pharyngeal airway

Endotracheal Intubation

Emergency Cricothyroidotomy or tracheotomy should be performed

- "Rapid Sequence Intubation" involves use of sedation and paralysis to facilitate intubation minimal risk of aspiration.
- Cervical spine immobilization can be done by with the help of cervical immobilization device.

B: Breathing

- ***Causes***: Fractured ribs, Pneumothorax, Penetrating Injury, Allergic reactions, Pulmonary emboli and Asthma attack.
- ***Clinical Manifestation***: Dyspnea, Asymptomatic Chestwall Movement, Decreased or Absent Breath Sounds, Visible wound to chest wall, Cyanosis, Tachycardia and Hypotension.
- ***Treatment***: High flow oxygen via non breather mask or Bag valve mask, Intubation and treatment of underlying cause.

C: Circulation

- Uncontrolled internal or external bleeding places a person at risk for hemorrhagic shock.
- ***Causes***: Direct cardiac injury, pericardial tamponade, Shock, Uncontrolled external haemorrhage.
- ***Assessment***: A central pulse should be checked because peripheral pulse may be absent as a result of direct injury or vasoconstriction.
- Skin to be checked for color, temperature and moisture

Cont…

- ***Treatment***: IV lines are inserted with two large bore needles with usually IVF like NS, RL solution.

  Direct pressure with the sterile dressing should be applied

  Blood samples to be collected for Grouping and Typing

  If needed packed RBC can be given.

D: Disability

- Degree of disability is measured by the patients level of conscious
- ***Assessment***: Neurologic Examination, Glasscow Coma Scale, pupils should be assessed for size, shape, response to light and equality.

A simple Mnemonic to remember is **AVPU**

- **A**: Alert, **V**: Response to Voice, **P**: Response to Pain, **U**: Unresponsive

Secondary Survey

- *E: Exposure/Environmental control*
- *F: Full set of vital signs/Five interventions/ Facilitate family presence*
- *G: Give Comfort Measures*
- *H: History/ Head to Toe Assessment*
- I: Inspect the Posterior Surfaces

E: Exposure/Environmental control

- Remove clothing for adequate examination. Keep patient warm with blankets, warmed IV fluids, over head lights.

F: Full set of vital signs/ Facilitate family presence

- Take complete set of vital signs – Temperature, Pulse, Respiration & BP
- Facilitating Family Presence completes the step and improves the comfort and support for the patient.

F:Five interventions

Five Interventions:

- Monitor ECG for Heart rate & Rhythm
- Pulse oxy meter for oxygen saturation monitoring
- Catheter should be inserted to monitor urine output.
- Nasogastric or orogastric tube to be inserted to relieve gastric decompression
- Lab. Studies for Grouping & Cross matching, ABGs, BUN, Cr., Sr. Elec, LFT, Cardiac Enzymes and coagulation profile.

G: Give Comfort Measures

- Provision of comfort measures is of paramount importance when caring for patients in Emergency Department.
- Pain is the primary complaint
- Pain management includes pharmacological and non-pharmacological measures
- General comfort measures like verbal reassurance, listening, reducing stimuli and developing a trusting relationship with the patient and family should be provided.

H: History/ Head to Toe Assessment

- History of the incident, injury or illness provides clues to the cause of the crisis and suggests specific assessment and skills.
- Use mnemonic **AMPLE**
- **A**: Allergies, **M**: Medication History, **P**: Past Health History, **L**: last Meal, **E**: Events/ Environment preceding illness.

Cont…

- Head to Toe Assessment:

  Head, Neck and Face:
- General Appearance, Skin color and Temperature
- Extra Ocular Movements, Battle's Sign, Raccoon Eyes
- Airway to be assessed for foreign bodies or block
- A stiff or painful neck area may signify a fracture of cervical vertebra

Cont…

Chest:

- The sternum, clavicles and ribs are palpated
- The patient should be evaluated for rib fractures, pulmonary contusion, blunt cardiac injury.
- 12 lead ECG to be obtained and breath sound to be auscultated.

Cont…

Abdomen and Flanks:

- Evaluate symmetry of external wall
- Assess type and location of pain
- Auscultate abdominal sounds
- Assess for masses and femoral pulses

Cont…

Pelvis and Perineum:

- Gently palpate pelvis, assess genitalia for blood
- Determine ability to void

Cont…

Extremities:

- Inspect signs of external injury
- Assess for quality and location of pain
- Observe skin colour and presence, quality and symmetry of peripheral pulses
- Evaluate motion and strength of arms and legs

I: Inspect the Posterior Surfaces

- Logrolling
- Inspection of back for ecchymosis, abrasions, puncture wound, cuts and obvious deformities.

EMERGENCY DRUGS AND EQUIPMENTS

EMERGENCY DRUGS

- These are drugs very frequently required in casualty, as many patient comes with pain and they want to go as soon as their pain is relieved. Depending upon the need and necessity these can be dispensed.

ANALGESICS

- Inj. Diclofenac sodium
- Inj. Tramzac
- Inj. Promethazine
- Inj. Buscopan
- Inj. Proxivon
- Inj. Pentazocin
- Inj. Piroxicam

ANTI EMETICS

- Inj. Metaclopromide (perenorm)
- Inj. Ondensterone (emeset)
- Inj. Prochorperazine (for vomiting in pregnancy)

Cont…

H2 Receptor Blocker

- Inj. Rantac

Proton pump inhibitors

- Inj. Pantaprozole
- Inj. Omeprozole
- Inj. Rabeperzole

Cont…

ANTI ALLERGICS:

- H-1 receptor antagonist:
- Inj. Chlorpheniramine maleate (avil)
- Inj. Promethazine (phenergan)

STEROIDS:

- Inj. Hydrocortisone (effcorlin)
- Inj. Dexamethazone (dexa)
- Inj. Methyprednesolone (mederol)

Cont…

BRONCHODILATOR:

- Inj. Aminophylline
- Inj. Salbutamol
- Inj. Deriphylline
- Inj. Turbutaline (The solution of asthalin and prevent for nebulization)

Cont…

- SEDATIVES:
- Inj. Diazepam
- Inj. Paraldehyde
- Inj. Medazolam

ANTI EPILEPTICS:

- Inj. Hydantoin (phenytoin)
- Inj. Phenobarbitone (gardinal)
- Inj. Diazepam

Cont…

DIURETICS:

- Inj. frusemide (lasix)
- Inj. Manitol

LOCAL ANAESTHESIA:

- Inj. Lignocane
- (plain and with adrenaline)

Cont…

CARDIAC DRUGS:

- Inj. Digoxin
- Inj. Nitroglycerine
- Inj. Sorbitrate
- Inj. Lidocaine
- Inj. Xylocard

Cont…

INOTROPES:

- Inj. Dopamine
- Inj. Dobutamine
- Inj. Isoprenelene
- Inj. Adrenaline

ANTI CHOLINERGIC:

- Inj. Neostigmine
- Inj. Atropine

Cont…

FOR HYPERGLYCEMIA:

- Inj. Insulin

FOR HYPOGLYCEMIA:

- 50% Dextrose

ANTI COAGULANT:

- Inj. Heparin

Cont…

THROMBOLYTIC DRUGS:

- Inj. Streptokinase
- Inj. Urokinase

HAEMOSTATICS:

- Inj. Vit K
- Inj. Adrenochrome
- Inj. Ethmstylate (K stat)
- Inj. Butorophase
- Inj. Tranexamic acids

Cont…

I.V FLUIDS:

- 5% Dextrose
- Dextrose normal saline
- Ringers lactate
- Isolate-p
- Isolate-m
- Inj. Haemocoele
- Inj. Dextran
- Normal saline

Cont…

MISCELLENOUS:

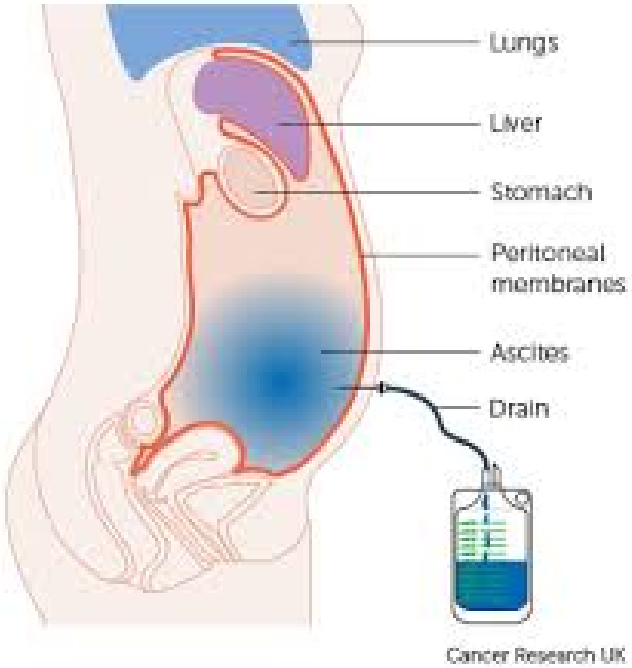
- Inj. Soda bi carbonate
- Inj. Calcium gluconate
- Inj. P.A.M
- Inj. Nikethenmide
- Inj. Depin
- Inj. Lomodex
- Inj. Tetvac

Consumables

- Disposable syringes
- I.V cannulas
- I.V drip sets
- Scalp vein sets
- Foleys catheter
- Nasogastric tubes

Cont…

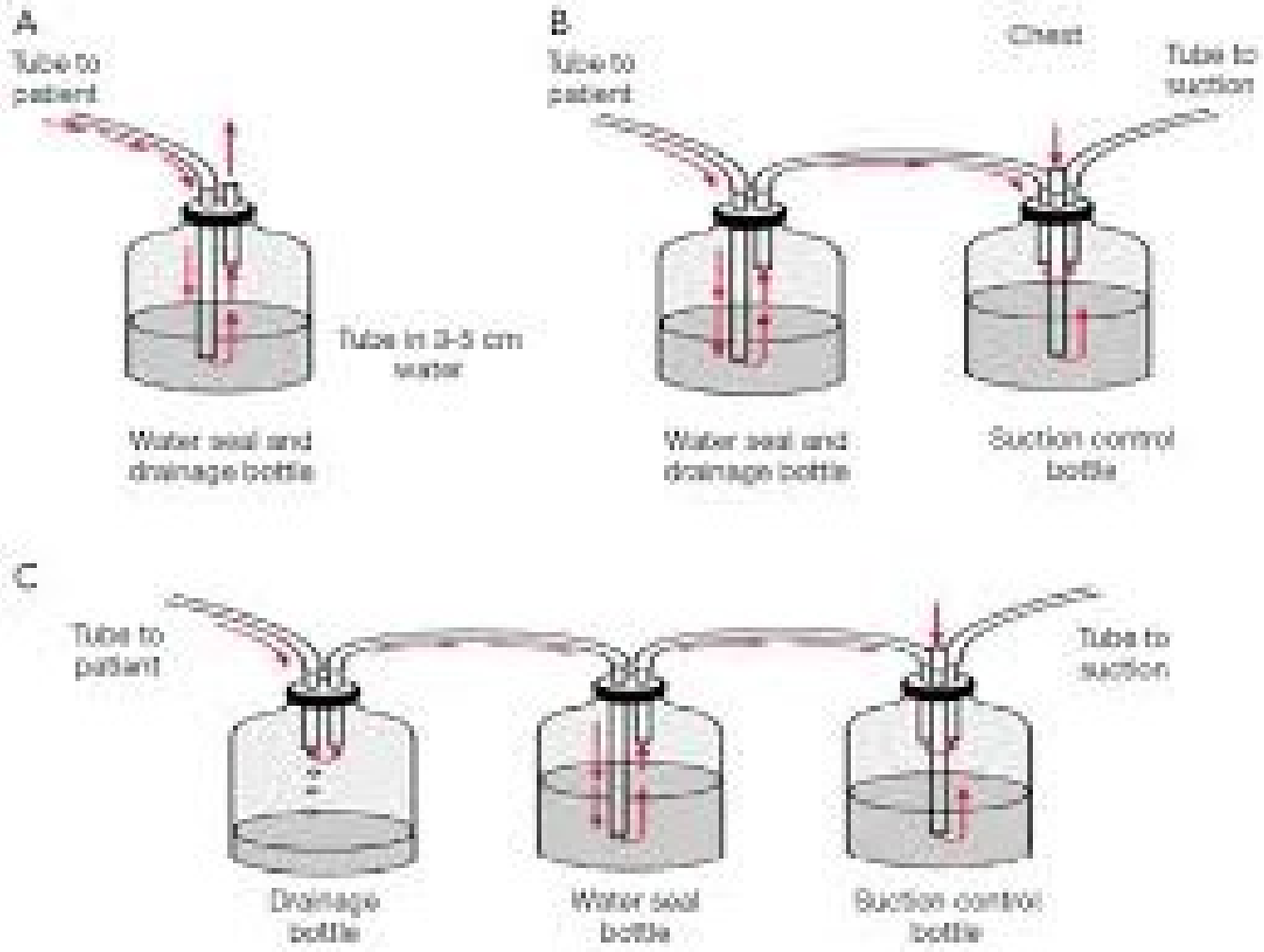
- Chest tubes
- Urobag
- Abdominal drainage tube



Cont…

- E.T tube
- Tracheotomy tube
- Under water seal bags etc.

Cont…


A
Tube to patient
Tube in 3-5 cm water
Water seal and drainage bottle
B
Tube to patient
Chest
Tube to suction
Water seal and drainage bottle
Suction control bottle
C
Tube to patient
Tube to suction
Drainage bottle
Water seal bottle
Suction control bottle

EMERGENCY EQUIPMENTS

- B.P apparatus
- Stethoscope
- Knee hammer
- E.C.G. machines

Cont…

- Pulse oxy meter
- Cardiac monitor
- Nebulizer
- Defibrillator

Cont…

- Laryngoscope
- Proto scope

Cont…

- Ophthalmic scope
- Weighing machine

Cont…

- E.N.T. instruments like nasal speculum, auroscope, tongue depressor

Cont…

- Thermometer
- Thomas splint
- AMBU bag
- Oxygen cylinder

Cont…

- Sterile water
- Suction machine
- Suction catheter

Cont…

- Beside above you must keep following sets ready and sterilized.

1. Suturing set; Gauze pieces, cut sheet, needle holder, artery forceps, tooth forceps, needles, suture material scissors and gloves.

Cont…

2. Cut-open set: Gauze pieces ,cut sheet, blades, B.P. apparatus, needle holder, artery forceps, plain and tooth forceps, needles, suture material scissors and gloves, I.V. cannula, infant feeding tube.

Cont…

3. Catheterization set: Gauze pieces, cut sheet, sponge holder, gloves, xylocaine jelly, syringes, Foley's catheter and urobag.

Cont…

4. Thoracocentesis set: Gauze pieces, cut sheet, gloves, blade, B.P. handle, suture material, needle holder, straight and curved artery forceps, chest tube, water seal bags, tooth and non tooth forceps.

Cont…

5. Tracheotomy set: Gauze pieces, cut sheet, gloves, B.P. handle, ribbon gauze, retractors, suture material, blade, needle holder and scissors.

Emergency Conditions

Environmental Emergencies

Increased interest in outdoor activities such as running, cycling, swimming, sailing has increased the number of environmental emergencies seen in ED.

Heat Related Emergencies

- Brief exposure to intense heat or prolonged exposure to less intense heat leads to heat stress when thermoregulatory mechanisms such as sweating, vasodilation and increased respirations cannot compensate for exposure to increased ambient temperatures.

Risk Factors

- *Age*: Elderly and Infants
- *Environmental Conditions*: High temperature, High Humidity
- *Preexisting Illness*: Cardiovascular Diseases, DM, Obesity, Previous Stroke, Skin Disorders.
- *Prescription Drugs*: Anticholinergics, Antihistamines, Antiparkinsonian, Diuretics, Tricyclic antidepressants.
- *Street Drugs*: Amphetamines, Lysergic acid Diethylamide, Phencyclidine.
- *Alcohol*

Cont…

Types:

Mild: Heat Rash and Heat Syncope

Severe: Heat Exhaustion and Heat Stroke

Etiology:

Environmental: Lack of acclimatization, physical exertion especially during hot weather.

Trauma: Head injury, Spinal cord Injury

Metabolic: Dehydration, Diabetes and Thyrotoxicosis

Drugs: Phenothiazine, Diuretics, Amphetamines, Tricyclic Antidepressants

Others: Cardiovascular Disease, CNS Disorders and Alcoholism

Heat Cramps

- They are severe cramps in large muscle groups fatigued by heavy work

Clinical Manifestations:

- Cramps, Nausea, Tachycardia, Pallor, Weakness and profuse Diaphoresis, Thirst.

Treatment:

- It resolves rapidly with rest and oral/ parenteral replacement of sodium and water
- Elevation, Gentle massage and Analgesia

Heat Exhaustion

- Prolonged exposure to heat over hours or days lead to heat exhaustion

Clinical Manifestations:

- Pale, Ashen, Fatigue, Weakness, profuse sweating, tachypnea, mild confusion, elevated body temperature, dilated pupils, weak thread pulse.

Treatment:

- Monitoring Airway, Breathing and Circulation
- Oral fluids and electrolyte replacement
- A moist sheet placed over the patient decreases core temperature through evaporative heat loss.

Heat Stroke

- The most serious form of heat stress results from failure of the hypothalamic thermoregulatory processes and is considered a medical emergency.

Clinical Manifestations:

- Hot dry skin, altered mental status, increased sweating and respiratory rate, fluid and electrolyte depletion, core temperature raises rapidly within 10 – 15 min.

Cont…

Treatment:

- Stabilizing patients Airway, Breathing and Circulation
- Administer 100% oxygen via BVM or Intubation
- Fluid and Electrolyte imbalances may be corrected

Complications:

- Monitor for the signs of rhabdomyolysis (breakdown of skeletal muscles) which leads to myoglobinuria which places kidney's at risk.

Cont…

Cooling methods:

- Removal of clothing
- Covering with wet sheet and placing the patient in front of large fan
- Administering and lavaging with cool fluids
- If shivering occurs CPZ I.V. is a drug of choice to suppress shivering. It should be continued upto the core temperature reaches 102 F.

Cold Related Emergencies

Cold Related Emergencies

- They are the injuries happened to the people due to excessive cold climate. The cold injuries may be localized or systematic.

Contributing factors

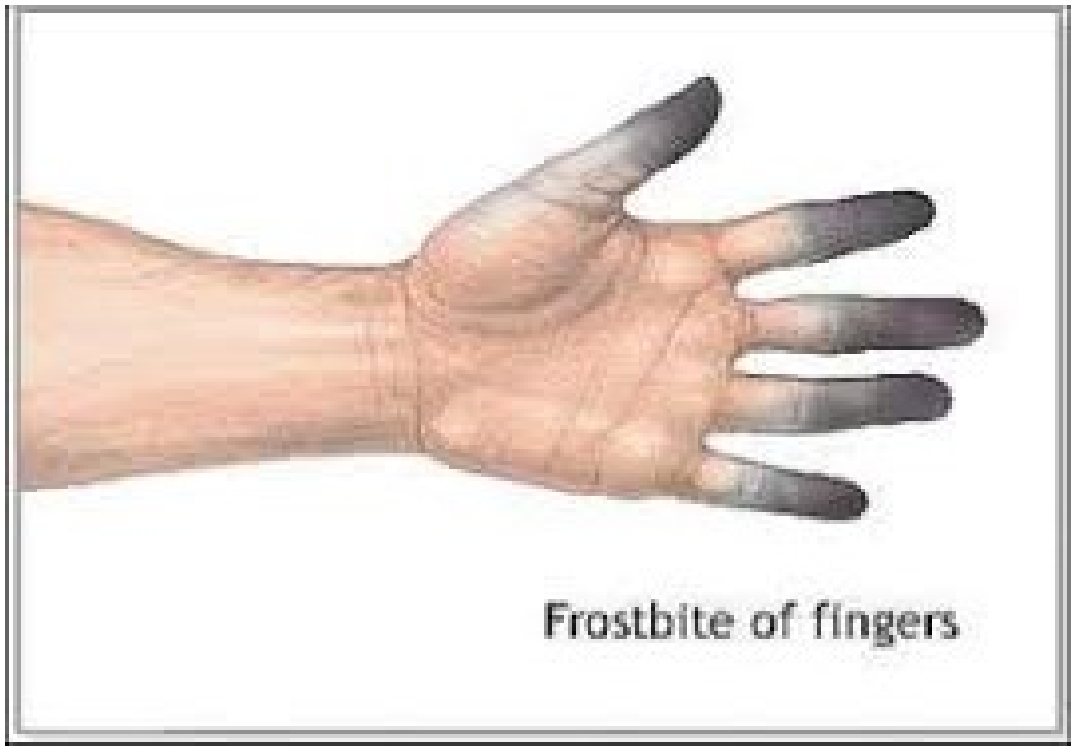
- Age
- Duration of exposure
- Environmental temperature
- Homelessness
- Preexisting conditions (PVD, DM)
- Medications that surpass shivering and
- Alcohol intoxication.

Etiology

- *Environmental*: Prolonged exposure to cold, prolonged submersion, inadequate clothing.
- *Metabolic*: Hypoglycemia, Hypothyroidism
- *Hospital Acquired*: Cold IV Fluids, Blood Administration due to inadequate warming, Administration of Neuromuscular blocking agent.
- *Others*: Phenothiazine, Barbiturates, Alcohol, Trauma, Shock

Frost Bite

- It can be described as true tissue freeing which results in the formation of ice crystals in the tissues and cells.



Superficial Frost Bite

- It involves skin and subcutaneous tissue usually the ear, nose, fingers and toes. The skin appear waxy pale yellow to blue or mottled.

Clinical Manifestations

- Tingling
- Numbness or burning sensation,
- Damaged tissue.

Treatment

- Clothing and jewelry should be removed
- Immerse affected area in water bath (102- 108F)
- Warm soak may be used for face
- If blisters forms, it should be debride and sterile dressing to be applied
- Analgesics and T.T prophylaxis

Hypothermia

- It is defined as core temperature less than 95 F occurs when heat produced by the body cannot compensate for heat lost to the environment.
- Environmental exposure to freezing temperatures, cold winds and wet, rain in the presence of physical exhaustion.
- Coma occurs when core temperature falls below 82.4F and death usually occurs when core temperature falls below 78 F.

Cont…

- *Mild Hypothermia*: (93.2 – 98.6 F) (34 – 36 C)

  Clients have shivering, lethargy, confusion, rational to irrational behavior and minor heart rate changes.
- *Moderate Hypothermia*: (86 – 93.2 F) (30 – 34 C)

  Rigidity, bradycardia, slowed respiratory rate, blood pressure obtainable only by Doppler, metabolic and respiratory acidosis and hypovolemia.

Cont…

- *Profound Hypothermia*: (Less than 86 F) (below 30 C)

  It makes the person to appear dead, metabolic rate, heart rate and respirations are slow, reflexes absent, pupils fixed and dilated. The cause of death is usually refractory ventricular fibrillation.

Collaborative Care

- Remove patient from environment
- Manage and Maintain A, B, C
- Provide high flow oxygen via BVM
- Correcting dehydration and acidosis

Rewarming the patient

Active External Rewarming:

- Body to body contact
- Fluid or air filled warming blankets or
- Radiant heat lamps.

Active Core Rewarming

- Used for moderate to profound hypothermia
- Heated humidified oxygen (107.6 – 114.8 F)
- Warm IV Fluids
- Peritoneal, gastric or Colonic lavage with warmed fluids
- Rewarming should be discontinued when temperature reaches 95 F.

Submersion Injuries

Submersion Injuries

- It results when a person becomes hypoxia due to submersion in a substances, usually water.

Etiology

- Inability to swim or exhaustion while swimming
- Entrapment with objects in water
- Loss of ability to move secondary to trauma, stroke, hypothermia
- Poor Judgement due to alcohol or drugs
- Seizure while in water

Assessment Findings

- Pulmonary: Dyspnea, Ineffective breathing, Respiratory distress, Respiratory arrest, Crackles, Ronchi, Cyanosis
- Cardiac: Tachycardia, Dysrhythmias, Hypotension, Cardiac arrest
- Others: Panic, Exhaustion, Coma.

Treatment

- Assessment of Airway, Cervical Spine, Breathing and Circulation
- Check temperature and begin rewarming.
- If necessary mechanical ventilation with positive end expiratory pressure to improve gas exchange.
- Mannitol or Frusemide to be given to decrease free water
- Remove wet clothing and obtain cervical and chest x-ray
- Insert gastric tube

Stabilization of victim

- Quickly remove any obstruction such as seaweed or mud from nose and mouth, Start CPR.
- If in deeper water give occasional breath of air while towing the casualty ashore.
- Turn the victim face down with head to one side and arms stretched beyond his head.

Cont…

- Use postural drainage to clear the aspirated water.
- Check breathing and heart beat and continue resuscitation.
- Raise the middle part of the body, press the chest and stomach and lungs to remove water.
- As soon as breathing begins, keep the casualty in recovery position.

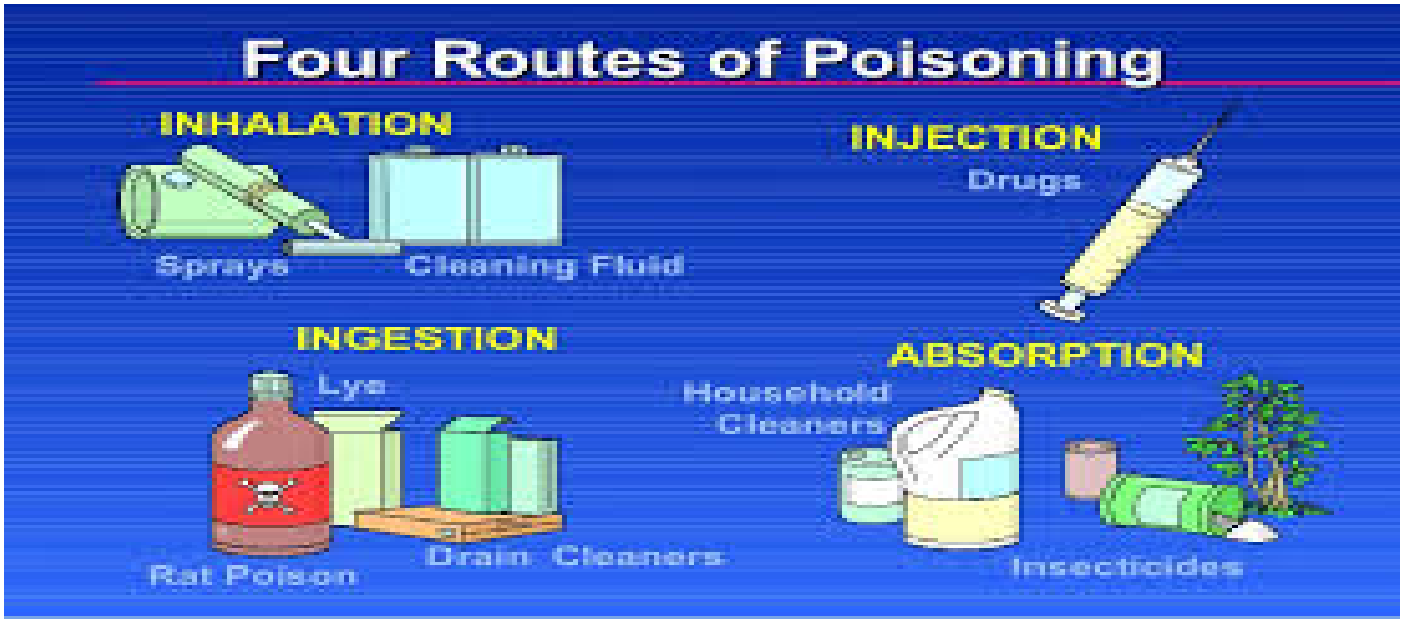
POISON

POISON

- Poison is any substance which when taken into the body in sufficient quantity is capable of injuring health or destroying life accidently or intentionally.

Routes

- Ingestion: Insecticides, Alcohol, drugs etc.
- Inhalation: Poisonous gases, vapors or fumes.
- Injection: Narcotics and Sedatives
- Contact: Chemicals enter through contact.



Causes

- Accidental poisoning
- Suicidal Poisoning
- Homicidal Poisoning

Sources

- Swallowed poisoning:

  Acids, Alkalis, Disinfectants etc.

Inhaled Poisons

- Fumes or gases from charcoal stoves
- House hold gas
- Motor exhaust and
- Smoke from explosion.

Injected Poisons

- Poisons get into the body through injection
- Bites of poisonous snakes and rabies dogs or
- Stings by scorpions and insects.

Household poisons

- Many substances found in and about the home can be poisonous.
- These includes liquid soap, some cosmetics, white spirit, rat poison etc

Clinical Manifestations

- Burning pain in alimentary canal
- Feeling of thirst
- Blood stained vomiting
- Extreme diarrhea
- Diminished urine output
- Cyanosis

Cont…

- Cold skin
- Tachycardia and feeble pulse
- Difficulty in breathing
- Perspiration
- Convulsions and
- Many casualties fall unconscious.

First Aid

- Take the casualty to the hospital at once
- Preserve all bottles or packets which first aider suspects to be poison
- Preserve any vomitus, sputum and stool for doctor to examine

If casualty is conscious…

- Aid vomiting by ticking the back of the throat by inserting two fingers.
- Make him to drink tepid water mixed with two table spoon of salt to a glass of water.
- Do not induce vomiting if the poison is corrosive

If the casualty is unconscious…

- Do not induce vomiting
- Make the casualty lie on his back on a flat hard bed without any pillow and turn the head to one side.

BITES AND STINGS

Snake Bite

Clinical Manifestations

- General Malaise
- Nausea and Vomiting
- Confusion
- Difficulty in breathing and vision
- Small puncture wound usually two may be visible at the site of the bite.

First Aid

- Reassurance, lay the casualty down, if a limb is affected, immobilize it.
- Observe pulse, respiration and level of consciousness
- Apply constrictive bandage on the heart side of the bite, tight enough to obstruct and stop the flow of the venom to all parts of the body.
- Wash the wound with soap and water and flush it with lots of water.

Diagnosis Method

- 20 minutes Blood Clotting Test: 10 ml of patient's blood has to be collected in plain vial and is checked for clotting. If it is not clotted after 20 min then it suggests viperian bite.

Management of Snake Bite

Protocol given by Ministry of Health and Family welfare Government of India with WHO

Do it RIGHT

- R – Reassurance
- I – Immobilization as per Fractured Limb
- G,H – Get to the Hospital without delay
- T – Telling the doctor of any symptoms

Cont…

Pain management:

- Never give NSAID's which cause Bleeding
- Never give morphine which cause Respiratory Failure

Anti-Snake Vaccine:

- It should be administered if there is significant envenomation (i.e) Incoagulable blood shown by the 20 min WBCT or significant leg swelling.
- Dosage: Initial Dosage: 8 – 10 vials administered over 1 hour – IV only
- Dose is same for Children, Pregnant and Elderly
- No ASV test dose

Hemato-toxic Bites

- Repeat Doses: 6 hrs rule
- Maximum Doses: 30 vials
- At the first sign of an adverse reaction the ASV is halted 0.5 mg of adrenalin is given IM and remaining dose should be given.
- Avil and Effcorlin can be given to prevent ASV anaphylaxis.

Cont…

- Hemotoxic bites with correct signs of envenomation can be treated with 8 – 10 vials of ASV.
- If any reaction occurs with adrenalin shift the patient to higher center.

Neurotoxic Bite

- Neostigmine test: Neostigmine 0.5 mg with Atropine 0.6 mg IV. It acts with cobra bite as cobra venom acts on post synaptic neurons.
- Neurotoxic bites with correct signs of envenomation can be treated with 8 – 10 vials of ASV.

Cont…

- If there is no evidence of impending respiratory failure or determining by patient's ability to perform neck lift the patient can treated locally.
- If a patient is unable to perform a neck lift then they will be transferred to higher centers with ventilator support.

Dog Bite

First aid

- To prevent rabies or other infections
- To get medical aid
- Wipe the saliva away from wound
- Wash the wound thoroughly with plenty of soap and water
- Cover the wound with dry, sterile dressing

Insect/ Spider Bite

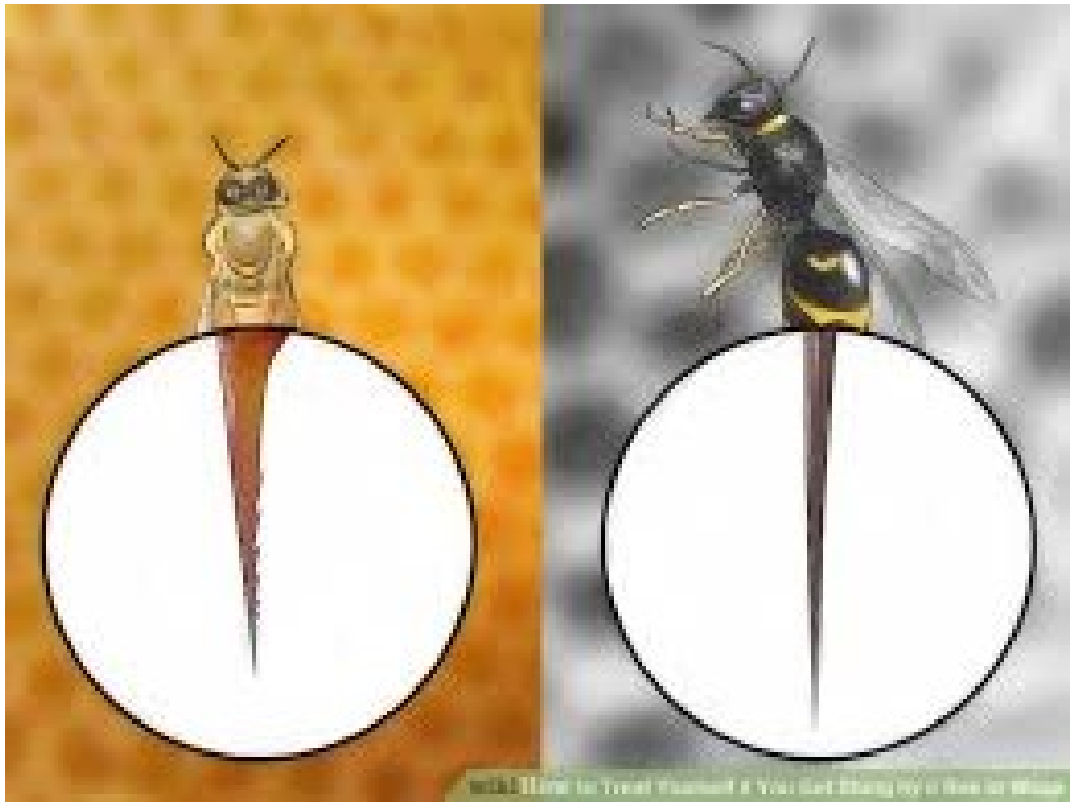
First aid

- Don’t try to remove insects normally, their mouth parts may remain in the skin
- Put the burning end of a cigarette to the body of the ticks and leeches, they will fall off
- Apply weak ammonia or bicarbonate of soda or anti histamine content

Cont…

- Mites are so small that they cannot be easily seen to be removed
- Clean the suspected area of mite infestation with methylated spirit
- Application of salt results in leech dropping off.

Bee and Wasp Stings



First aid

- The sting should be removed with forceps or with the tip of a sterilized needle
- Apply weak ammonia or bicarbonate of soda or antihistamine ointment to the area. This will relieve the pain.
- Apply cold compress
- If there is persistent pain or swelling, seek medical help