Snakebite

- Snake are ectothermic (cold blooded) vertebrate of class reptilia, there are 3000 species of snakes having specialized salivary glands to produce venoms as an evolutionary strategy for their defense against predators while venoms are complex mixtures of enzymes and non- enzymes proteins of 25 different types, these include proteinases, phophlipases A,B,C and lipases, arginases, hydrolases etc.

- Non poisonous snakes may also bite, but the term snakebite generally refers to the bite of poisonous snake.
- The symptoms of snake bite depend not only the types of venoms but also the amount of venoms injected may be released no venom or 75% of total amount stored in the glands, in case of self defense it inject less venoms than it attack on its prey.

Classification

PHYLUM	Chordata
SUBPHYLUM	Vertebrata
CLASS	Reptilia
ORDER	Squamata
SUBORDER	Ophedia
FAMILY	Colubridae & viperidae (poisonous)

Important subfamilies are

Elapidae	Neurotoxin e. g cobra ,krait
Hydrophaidae	Myotoxic
Viperinae	Hemolytic toxin e. g viper

Snake-bite is a neglected tropical disease

Early in 2009, snake-bite was finally included in the WHO's list of neglected Tropical diseases,

i. It is clear that in many parts of the South East Asian region, snake-bite is an important **medical emergency** and cause of hospital admission.

ii. Snake-bite is an **occupational disease** of farmers, plantation workers, herdsmen, fishermen, snake restaurant workers and other food producers

Epidemiology

Geographical distribution

Incidence

- WHO incidence is 300000/yr
- 1 to 5 million people bitten / Yr
- Mortality is 30000 – 40000/Yr
- Fatal snakebites in South East Asia
- Death rate is 1.90 per 10000 pop in Pakistan

Peak incidence from June to August

- Worldwide incidence has 3 main causes

- Sindh (acute public health problem) among 5 commonest causes of hospital admission
- Due to cultural, socioeconomic factors not all cases referred to doctors.

Snake bite and its venom

- Varies from specie to specie
- Current research estimates that as many as one in 5 snake bites are dry(no venom)

The venom having two type of toxins.

Hemolytic Toxin:- Attack on the blood vessels cause to escape the serum into surrounding tissues causes clotting within the vessels resulting in swelling, pain, discoloration at the site and leading to shock and death the effect is immediate and local.

Neurotoxins:-Symptoms appear later, affect nerves at remote site, respiratory distress can occur less severe. Symptoms include tingling and prickly feelings and eyelids paralysis.

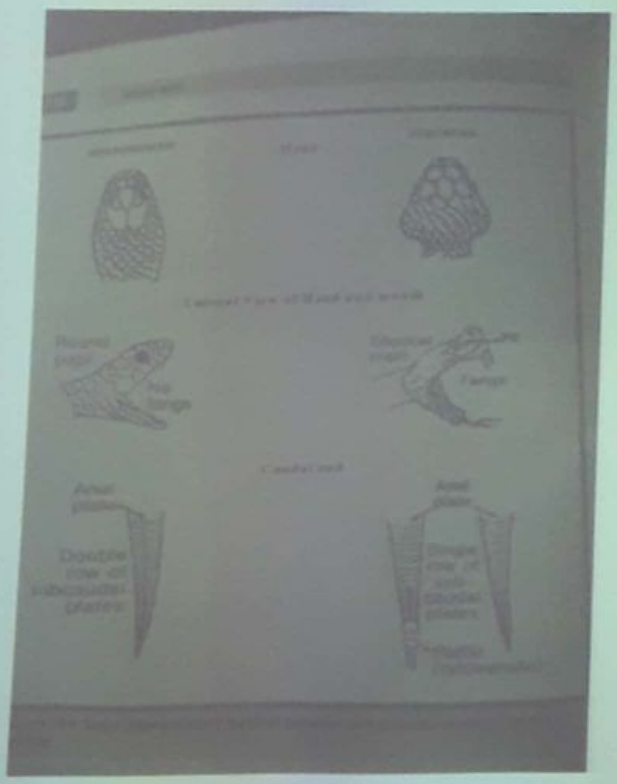
Poisonous and Non venomous

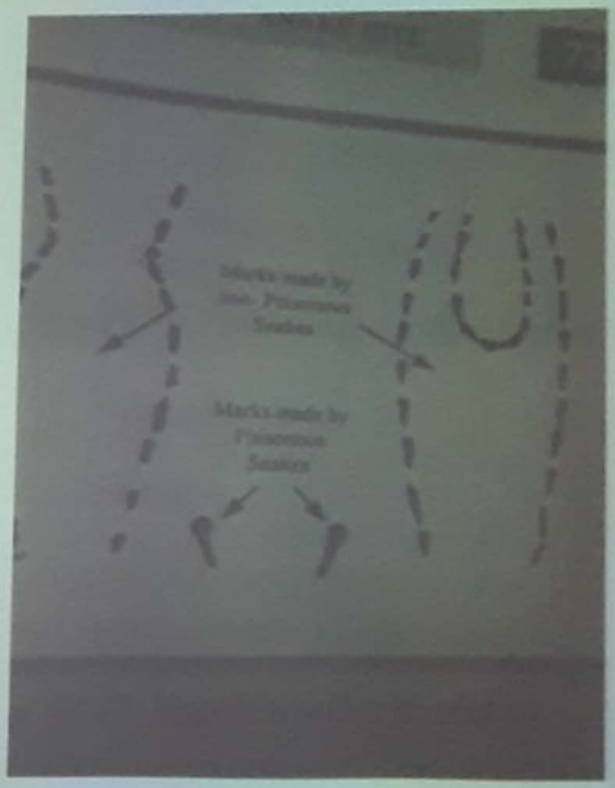
- Its very hard to tell for sure if a snake is venomous or a non poisonous, Actually snakes are not poisonous, but they are venomous because they inject venom.
- Venomous and poisonous produce a toxin, which is lethal for other animals or human. Venomous creatures inject venom into another animal usually fangs or a stinger poisonous animal can only deliver toxic and harmful when touched.

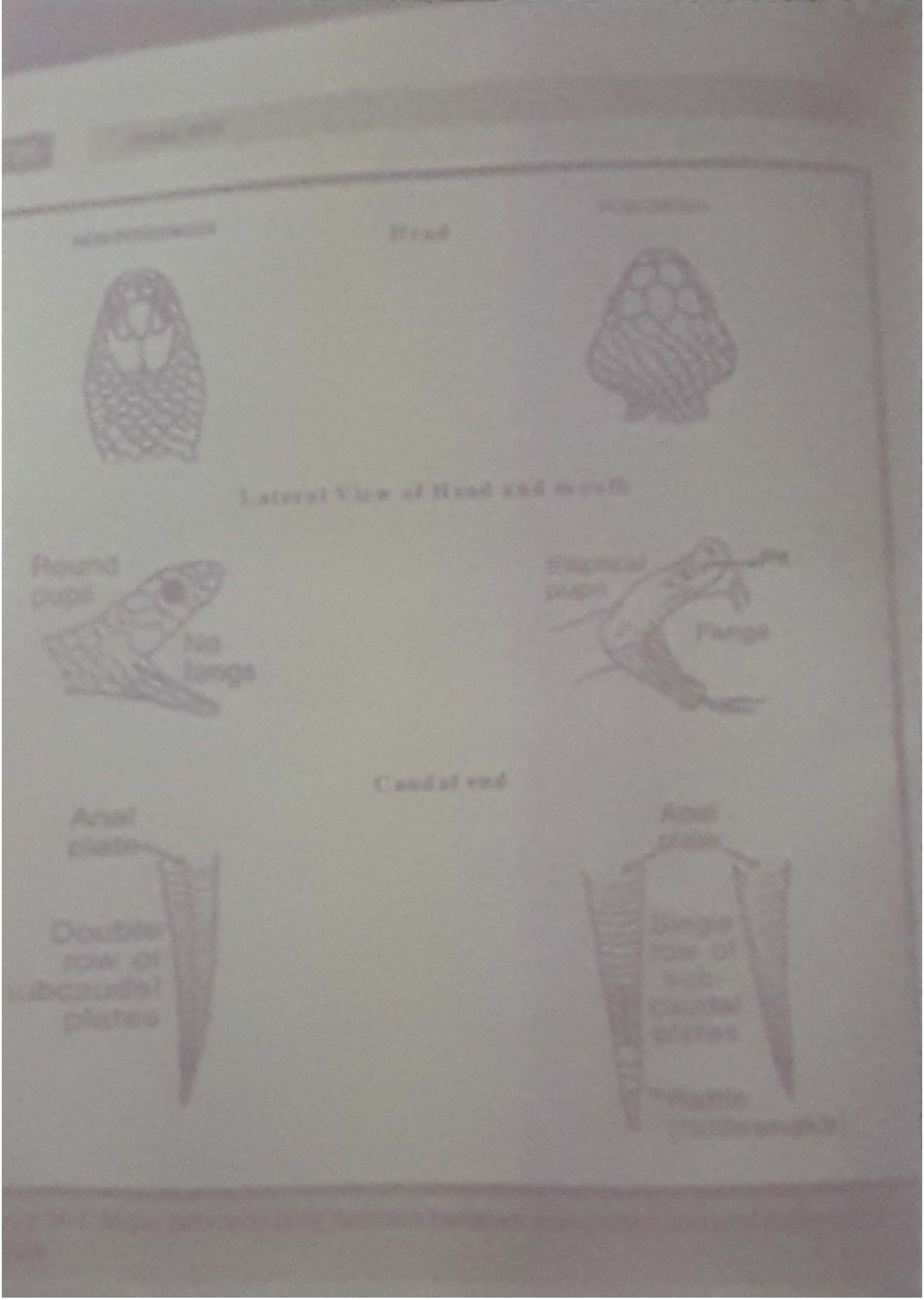
- All poisonous snakes are generally brightly colored
- Venomous snakes have a very distinctive head, looks like hand or triangular and side portion is wide.
- Cobra group of snakes are Highly Venomous
- Venomous snakes has heat sensitive pit
- All sea snakes are Highly Poisonous
- Poisonous snakes Family- Elapidae, Colubridae and Viperidae

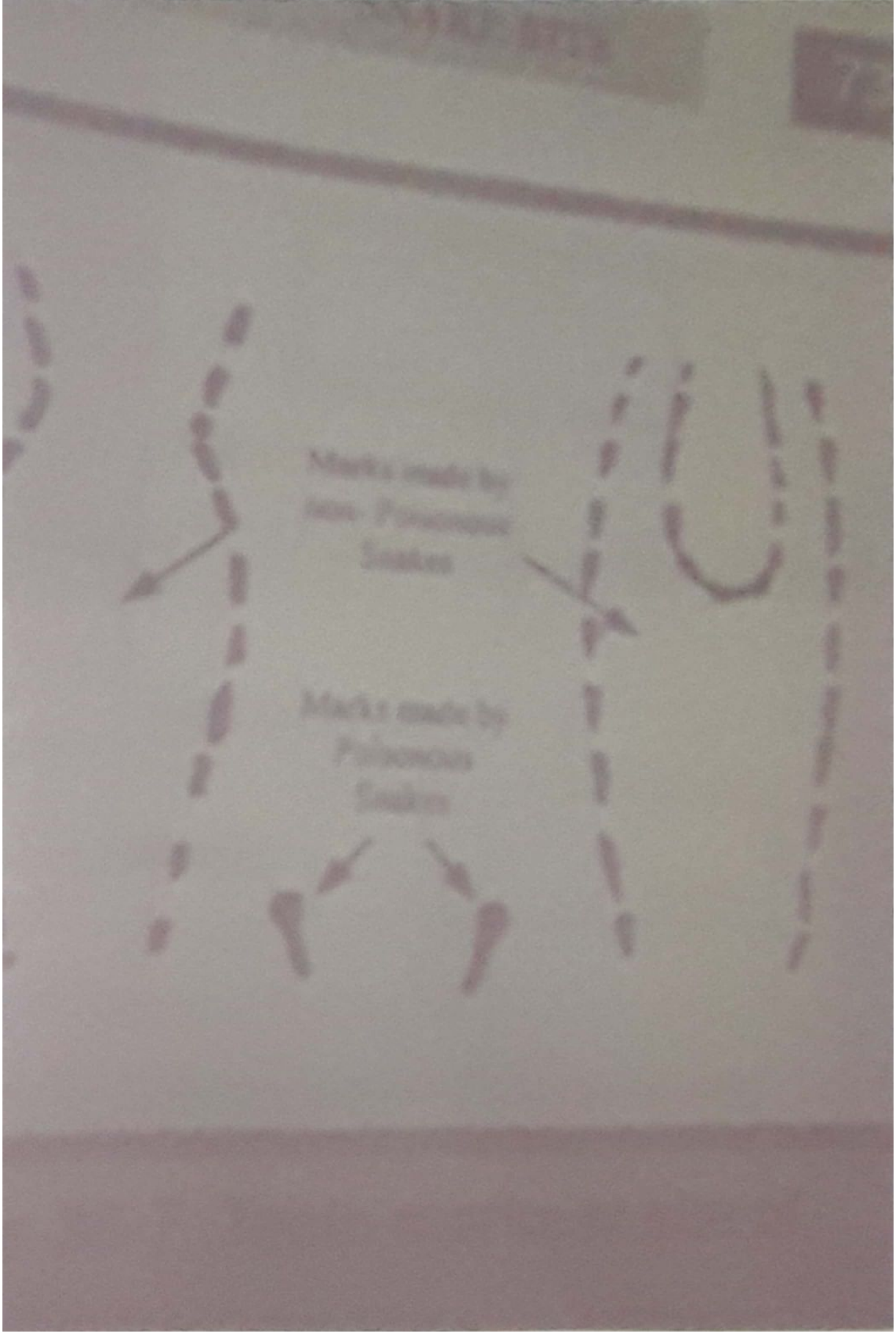
- Non Poisonous Snakes are not brightly colored
- Non Poisonous Snake head is usually narrow and elongated
- Usually No venomous snake do not have Fangs but few snakes do have Fangs
- Pythons are Non Venomous but equipped with rows of teeth
- Venomous Vs Poisonous

Features of poisonous and non poisonous snakes and bite marks









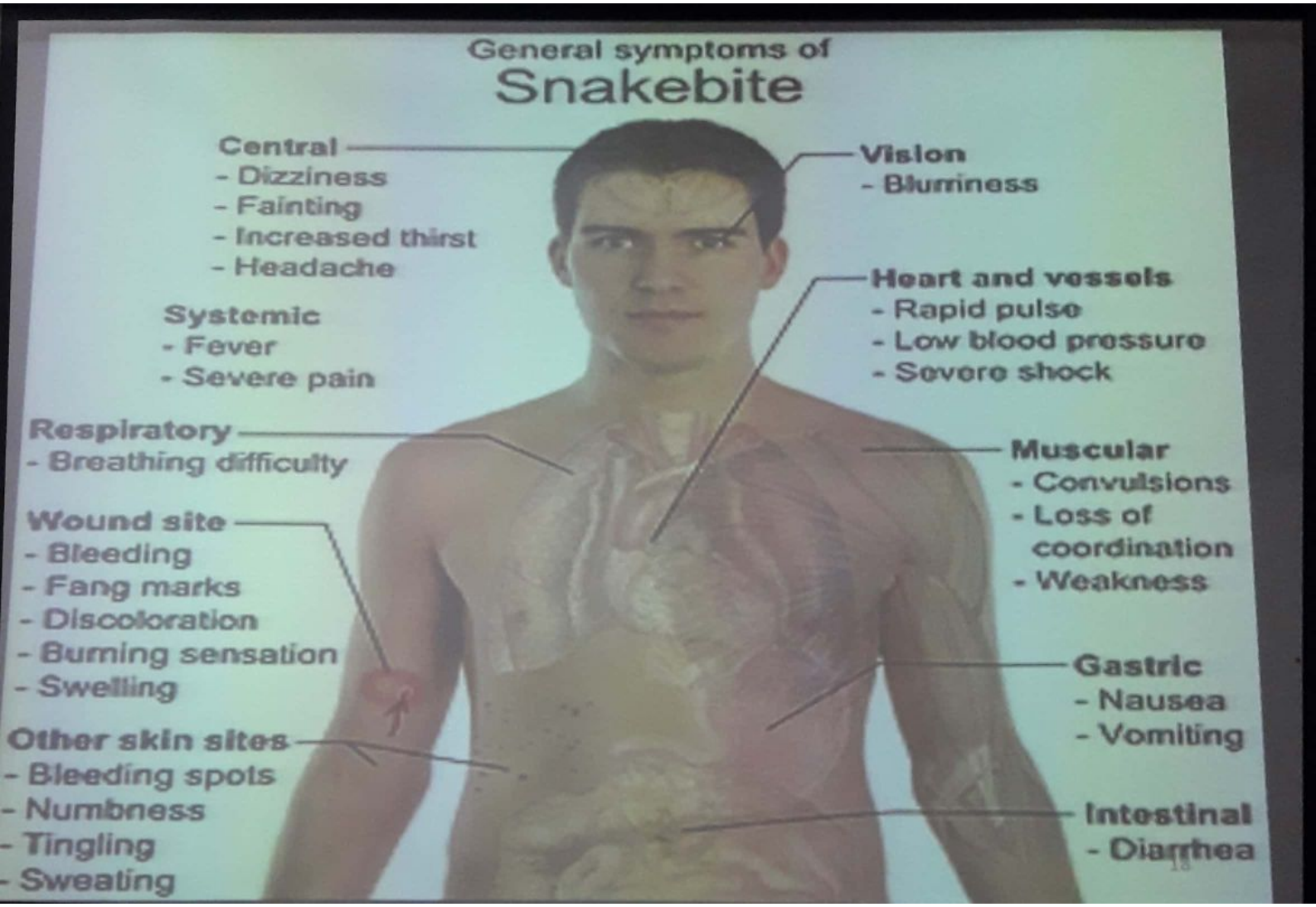
Gravity of snake-bite

FACTORS IN SNAKE	FACTORS IN VICTIM
Age, size, health of snake	Also age and general health
Agitation	Absorption rate
Weather	Site of distal end / fatty area
Hibernation	Personality
Prior attack	Sensitivity of attack to venom
Preventive measures/type of venom & amount of venom/depth of envenomation	Psychological impact, type of 1st aid.

Who is at risk

- Firewood collection
- Dislodging of stones
- Probing
- Climbing trees / rocks
- Sleeping on ground
- Children from 9-15 years

Clinical manifestations



Clinical Manifestations

According to type of snake:-

Viper

Local pain, edema, swelling discoloration

Lymphadenopathy, ecchymosis, serum filled blebs

Shock.

Danger signs hematuria bleeding gums, hematemesis, melena

Cause of death may be massive cerebral /intestinal hemorrhage.

- Elapid

Pain

Local symptoms much less

General symptoms

Neurotoxins involve bulbar centers causing ptosis, strabismus, slurred speech, dysphagia, drooling of saliva

Paralysis

Respiratory arrest can occur

Clinical manifestations

Management of Snake bite

AIMS OF MANAGEMENT

- Retarding absorption of venom & removing as much as possible
- Neutralization of venom
- Relief of symptoms & prevention of symptoms

Management of Snake bite

- IMMEDIATE MEASURES (reassurance app. of constriction band. Clean the bite with soap and water or antiseptic wipe before administering any other, snake bite first aid).
- EXAMINATION OF THE BITE SITE
- WHEN SNAKE IS AVAILABLE FOR EXAMINATION

1st aid

Aims of first-aid

- **Attempt to retard systemic absorption of venom.**
- Preserve life and prevent complications before the patient can receive medical care
- Control distressing or dangerous early symptoms of envenoming.
- **Arrange the transport** of the patient to a place where they can receive medical care.
- **ABOVE ALL, AIM TO DO NO HARM**

FIRST AID

- Cut and suck
- Cold Pack method
- Electroshock treatment
- Australian Pressure Technique

Clinical Assessment		
History	• Description of snake • S/S since injury • H/o exposure of horse serum	
Physical Examination	• Examination of site of bites • Serial of estimation diameter of extremities • Repeat neurological examination • Repeated spitting into white enamel bowl	
Diagnosis	•Skin sensitivity to horse serum • Complete blood picture • Blood type and Cross matching • U/RE and microscopy • Prothrombin time • Partial prthrombin time • BUN	• Creatinine • Electrolyte • Glucose •Transaminase

Examination Of The Bite Site

- Envenomation (if escaped) treated as poisonous
- Differentiation b/w poisonous and non poisonous snakes single to two needles like fangs marks, distance b/w bites shows size of snake. If u shaped marks non poisonous.
- Pain , swelling, discoloration & discharge from the wound------poisonous snake
- Systemic signs & symptoms also confirm

General characteristics of non Poisonous Snake

- Tails not markedly compressed
- Usually belly covered with transverse plates which do not extend completely
- No long & grooved fangs

Specific Measures

- Serum Therapy (antivenin Therapy)
- Sensitivity
- Route of Administration
- Dosage
- Supportive and Symptomatic Measures

Supportive and systemic measures

- Bed rest
- Warmth
- Analgesics and sedatives
- Shock
- Ventilation support
- Antibiotics
- Tetanus -----gas gangrene prophylaxis
- Steroids
- Heparin
- Symptomatic treatment of vomiting , excessive salivation & convulsions

Sequlae of Snake Bite

- No effect
- Psychogenic effect
- Effects due to envenomation acc. to type of snake
  - ✓ Local effect
  - ✓ Haemotoxic
  - ✓ Neurotoxic
  - ✓ Myotoxic
- Sequlae of wrong indigenous procedure
- Other complications

Prevention

When you see a snake, just leave it alone! Most bites occur because people try to handle snakes they find

- High boots
- Use torches in the fields at night
- Not to put hands in hollow logs or animal burrows
- Residential areas must be kept clean and searched for holes

- Special measures for scouts and soldiers
- Don't reach under rocks, crevasses, logs, branches, etc... where they could be hiding.
- Always check and shake out your boots, sleeping bag, and clothes before putting them on.
- Keep your tent zipped
- Mass public education in first aid management

- In snake areas , adequate supply of anti venin in convenient centers.
- When hiking through thick brush, use your trekking pole or a stick to flush the bushes ahead of you as you walk. This will either entice a snake to slither away or cause it to rattle. Either way, you're not getting bite