

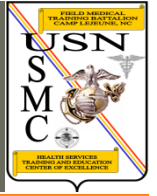


ENVENOMATION INJURIES





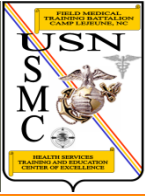
OVERVIEW



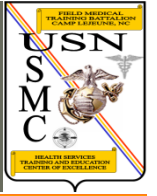
- Definitions
- Types of Venomous Snakes
- Treatment of Snake Bites
- Management of Arthropod Envenomation
- Anaphylactic Shock



LEARNING OBJECTIVES

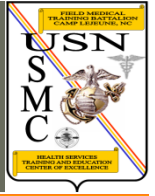


Please Read Your
Terminal Learning Objectives
And
Enabling Learning Objectives





DEFINITIONS



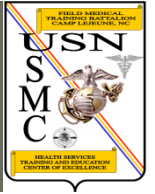
- Envenomation
 - An injury of illness caused by the poisonous secretion of an animal, usually transmitted by a bite or sting.



ACTIONS OF SNAKE VENOM



- Hemotoxin:
 - Destroy red blood cells, disrupts blood clotting, and cause organ degeneration and tissue damage.
- Neurotoxin:
 - Acts on nerve cells and tissue, and disrupts brain function.
- Cytotoxin: Typically attacks only a specific type of cell, muscle group, or organ.





CLASSIFICATIONS OF VENOMOUS SNAKE

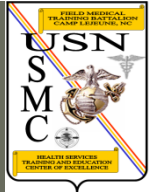


SNAKE VENOM:

- Affects the body in a number of ways depending on:
 - Type and quantity of venom
- Different snake species produce different types of venom.



CROTALINAE (PIT VIPERS)



- Venom: Hemotoxin
- Characteristics:
 - Retractable fangs
 - Heat sensing pit
 - Large triangular head
 - Slit-like pupils

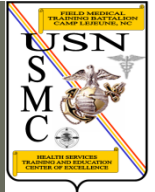


CROTALINAE (PIT VIPERS)

- Examples:
 - Rattlesnakes
 - Moccasins
 - Copperheads
 - Saw-Scaled viper
 - Habu



Eastern Diamondback Rattlesnake



CROTALINAE (PIT VIPERS)

COTTONMOUTH (WATER MOCCASIN)



SAW SCALED VIPER



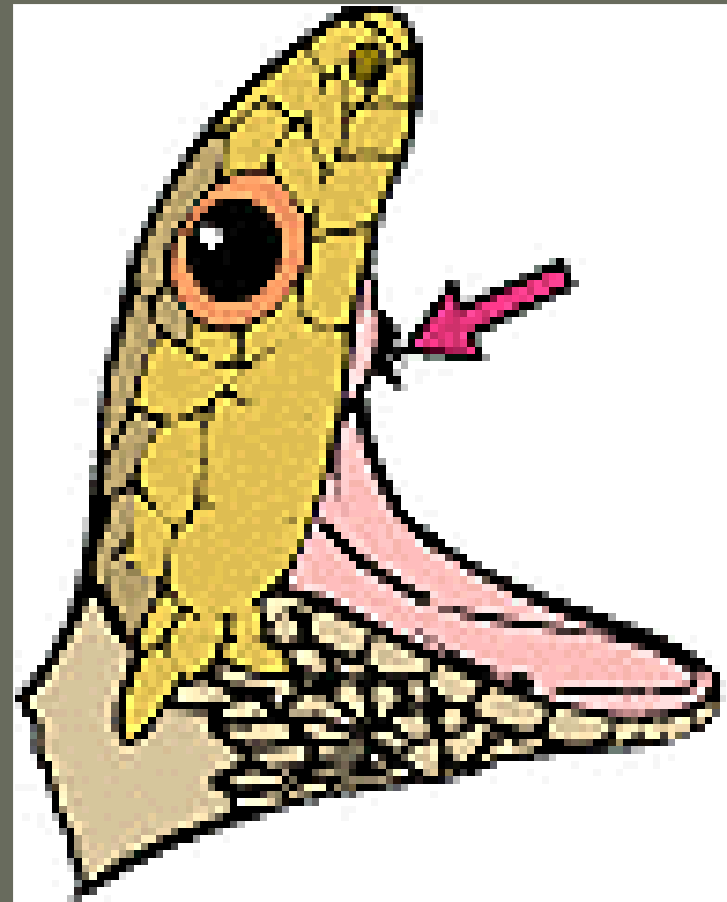
CROTALINAE (PIT VIPERS)

- Signs and Symptoms:
 - Excruciating pain at bite site
 - Tissue swelling at bite site
 - Bleeding from major organs (hematuria)
 - Tingling or numbness
 - Headache
 - Nausea / vomiting
 - Death may occur within 6-48 hours



COLUBRINAE

- Characteristics:
 - Venom is hemotoxic
 - Fixed fangs in rear of mouth
 - Egg shaped head
 - Large eyes



COLUBRINAE

- Signs and Symptoms:
 - Symptoms may not manifest until hours after bite.
 - Hemorrhage to gums, nose and other orifices
 - Headache / nausea
 - Blood in stool, urine, or saliva
 - Death due to internal bleeding





COLUBRINAE



- BOOMSLANG



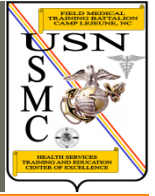
ELAPINAE

- Characteristics:
 - Venom is neurotoxic
 - Front fixed hollow fangs
 - Round pupils
 - Head shape is in proportion to the width of body





ELAPINAE



- Signs and Symptoms:
 - Stiffness, muscle aches, spasms
 - Severe headache, blurred vision, and drowsiness
 - Pain at bite site
 - Nausea, vomiting, and diarrhea
 - Chills with rapid onset of fever
 - Respiratory paralysis and death

ELAPINAE (CORAL SNAKES)

- EXAMPLES: Coral Snakes, Cobra, Krait
(red on black, red on yellow, and other patterns)



Tropical Coral
Snake



Eastern Coral
Snake

ELAPINAE



KRAIT



COBRA

HYDROPHIINAE (SEA SNAKES)

- Characteristics:
 - Neurotoxic venom
 - Fixed fangs
 - Flat tail
 - Brightly colored





HYDROPHIINAE (SEA SNAKES)



- Signs and Symptoms:
 - Bites are usually painless
 - Little or no swelling
 - Most important early symptoms are of rhabdomyolysis
 - Headache
 - Thick-feeling tongue
 - Thirst
 - Sweating
 - Vomiting

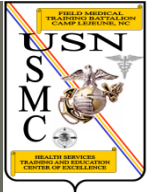




HYDROPHIINAE (SEA SNAKES)

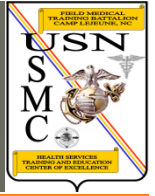


- Symptoms that can occur after 30 minutes to several hours post-bite include:
 - Generalized aching
 - Stiffness and tenderness of muscles all over the body
 - Paralysis of voluntary muscles
 - Paralysis of muscles involved in swallowing and respiration can be fatal
- After 6 to 12 hours the result of muscle breakdown can lead to cardiac arrest.





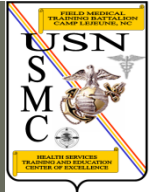
TREATMENT OF A SNAKE BITE



- Diagnosing a snake bite:
- Fang marks
- Bleeding, small lacerations
- Presence of fang marks does not always indicate envenomation
- Manifestation of signs and symptoms of envenomation are necessary to confirm diagnosis of a snake venom poisoning.



TREATMENT OF A SNAKE BITE



Snake bite

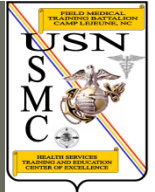


TREATMENT

- Most definitive care is:

ANTIVENOM

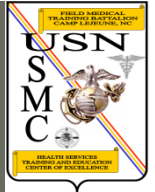




TREATMENT OF SNAKEBITE

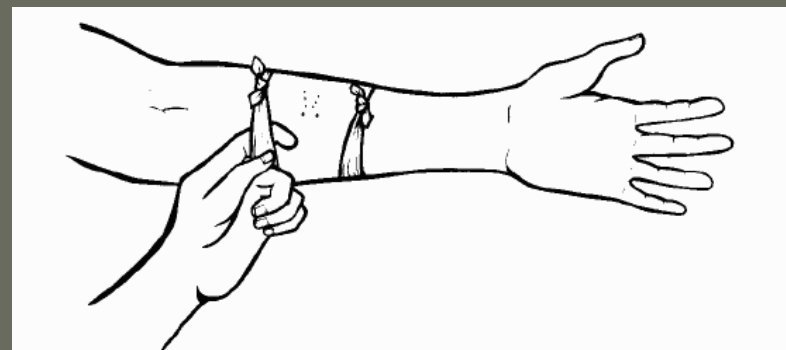
- Keep victim calm and reassured
- Allow limb to rest at a neutral position in relation to heart
- Locate bite site, removing any rings or constricting items from extremity





TREATMENT OF SNAKEBITE

- If on extremity, place constricting band above and below the bite.
- On hand or foot, single band above wrist or ankle.
- Apply splint
- Check distal pulses
- Monitor and TACEVAC





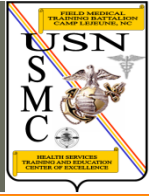
COMMON DON'TS



- DO NOT cut or incise the bite site
- DO NOT apply ice or heat
- DO NOT apply oral suction
- DO NOT remove any dressings/bandages
- DO NOT try to kill the snake for identification
- DO NOT have the victim eat or drink anything



PREVENTION OF SNAKE BITES



- LEAVE THE SNAKE ALONE !!!!!
- Keep your hands and feet out of areas you can't see.





ARTHROPOD ENVENOMATION

BEEES AND WASPS



Honey bee



Bumble bee



Wasp

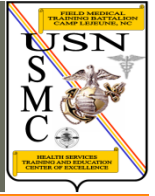


Hornet

- Reaction to sting from histamine response
- Honey bees sting once and leave stingers in skin
- Wasps, bumble bees, and hornets can sting multiple times



BEEES AND WASPS



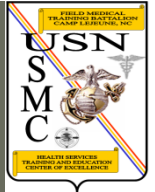
Signs and Symptoms

- Pain
- Itching/burning sensation
- Wheal
- Be aware for anaphylactic shock





INSECT STING TREATMENT



- Immediately remove stinger
 - DO NOT USE TWEEZERS
 - Scrap across skin with card or knife blade
- Apply ice
- Hydrocortisone 1% BID
- Monitor for Anaphalaxis



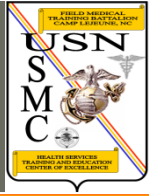
ANTS

- Some species of ants can bite repeatedly, while some have stingers at the tip of their abdomen.
- Signs and Symptoms:
 - Pain
 - Itching/burning
 - Vesicles
 - Monitor for anaphylactic reaction





ANTS



- Multiple bites can cause more severe reactions
 - Vomiting
 - Diarrhea
 - Edema
 - Hypotension due to vasodilatation
- Treatment
 - Apply ice
 - Apply Hydrocortisone 1% BID
 - Monitor for Anaphylaxis

MILLIPEDES

- Secrete toxin as a defense mechanism
- Signs and Symptoms:
 - Dermatitis that begins with a brown stain on skin
 - Secretions in the eye can cause lacrimation and blurry vision





MILLIPEDES



- Treatment:
 - Wash skin with soap and water
 - If toxin is secreted in the eyes, irrigate with water or saline; an ophthalmologic evaluation is mandatory
 - Monitor for anaphylaxis



CENTIPEDES

- Signs and Symptoms:
 - Burning pain, tenderness
 - Erythema (redness)
 - Local swelling
 - Superficial necrosis and ulceration may sometimes occur



CENTIPEDES



- Treatment:
 - NSAIDS
 - Lidocaine or other anesthetic
 - Look for anaphylactic reaction



CATERPILLARS

- Venomous caterpillars have venom in hollow hairs all over their bodies
- Signs and Symptoms:
 - Dermatitis
 - Erythema and edema
 - Conjunctivitis
 - Necrosis



Saddle back caterpillar

CATERPILLARS

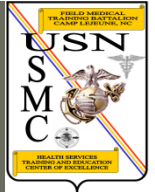


Treatment:

- Use scotch tape to remove hairs from skin
- Do not rub area
- Monitor for anaphylaxis



BLACK WIDOW SPIDER

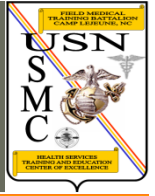


**Venom is
Neurotoxic**

**Red "Hourglass"
shape on abdomen**



BLACK WIDOW



- Signs and Symptoms:
 - Initial pain is not severe, but severe local pain rapidly develops
 - Pain gradually spreads over the entire body and settles in the abdomen and legs
 - Weakness
 - Sweating
 - Excessive salivation
 - Rash may occur





BLACK WIDOW



- Signs and Symptoms (cont):
 - Tremors
 - Nausea/vomiting
 - Respiratory muscle weakness combined with pain may lead to respiratory arrest
 - Anaphylactic reactions can occur but are rare
 - Symptoms usually regress after several hours and are usually gone in a few days

BLACK WIDOW



- Treatment:
 - Clean with soap and water
 - Intermittent ice for 30 minutes each hour
 - Antibiotics if infection occurs

BROWN RECLUSE

- Small body
- Light brown
- Dark brown violin shape on posterior thorax
- Venom is hemotoxic / cytotoxic



BROWN RECLUSE

- Signs & Symptoms:
 - Painless bite
 - Painful red area with cyanotic center develops within few hours
 - Tissue damage is possible

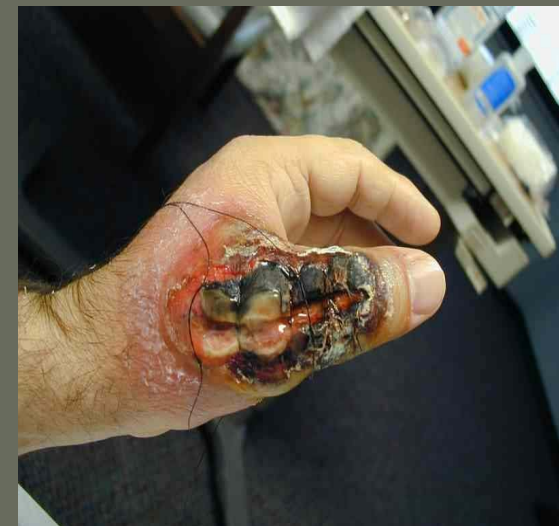


Area of discoloration that does not blanch
after several days.



BROWN RECLUSE

- Signs & Symptoms:
 - After 1-2 weeks
 - Area turns DARK and scab falls off leaving ulcer
 - Ulcer may persist for weeks to months
 - Systemic reaction may occur that could lead to death



BROWN RECLUSE

- Treatment:
 - Cold compresses
 - Provide supportive care
 - Refer to Medical Officer
 - Tetanus prophylaxis and antibiotics
 - Monitor for anaphylaxis





SCORPIONS



- Predatory arthropods that have eight legs, a pair of grasping claws and a narrow segmented tail ending with a venomous stinger.
- Scorpions range in size and are found widely distributed over all continents.
- Scorpion venom has a fearsome reputation and about 25 species are known to have venom capable of killing a human being.
- Venom is neurotoxic



SCORPION STING

- Signs and Symptoms:
 - Erythema and edema
 - Pain and/or paresthesia
 - Cranial nerve dysfunction
 - Somatic skeletal neuromuscular dysfunction



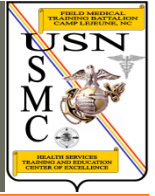
SCORPION STING

- Treatment:
 - Based on level of envenomation
 - Ice
 - Oral analgesics
 - Monitor for anaphylaxis

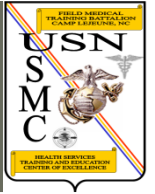




PREVENTION OF ARTHROPOD ENVENOMATION

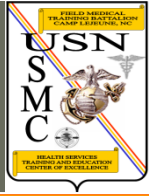


- LEAVE THEM ALONE
- Avoid nesting sites and hives
- Personnel with known allergies should carry an Epi-pen or Ana-kit
- Shake out sleeping bags and clothing
- Check boots
- Wear shoes
- Wear gloves
- Remove rubbish and wood from camp
- Fill in cracks and recesses





ANAPHYLACTIC SHOCK



- Life threatening reaction to an allergen
- May have a rapid and severe onset
- May be caused by:

Injections

Stings

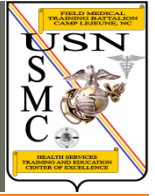
Ingestion

Inhalation

Absorption



ANAPHYLACTIC SHOCK



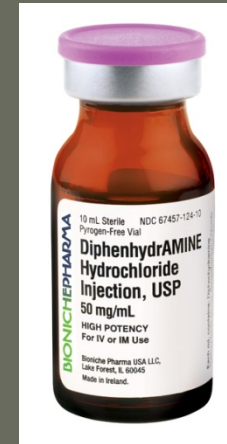
- Signs and Symptoms:
 - will progressively get worse
 - Itching, redness, hives
 - Respiratory depression
 - Sense of fullness in throat
 - Anxiety, SOB, lightheadedness
 - Decreased LOC

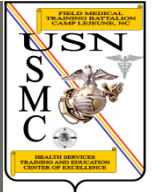
The faster the onset of symptoms,
the more severe the reaction!



ANAPHYLACTIC SHOCK

- Treatment:
 - Maintain ABC's
 - Benadryl
 - Epinephrine
 - Fluid resuscitation
 - Documentation of medicines given
 - TACEVAC







ENVENOMATION INJURIES

