



# **Animal Related Injuries**

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# Learning Objectives



- Identify major animal related injuries
- Use of Haddon's matrix
- Familiarize with risk factors and preventive strategies for common animal related injuries in India

# Animal involvement in injury



- Envenomation (snakes, scorpions)
- Attack/bite (dog, crocodile, other wild animal)
- Fall from animal being ridden (most commonly horse)
- Crushed by animal (domestic)
- Allergic response to bee/wasp stings
- Disease carried by attacking animal (rabies, etc)



# INCIDENCE ?

Snake bite

Dog bite

Scorpion bite

# INCIDENCE IN INDIA



## Snake bite

- >5 million cases annually
- >50,000 deaths (registered) annually

## Dog bite

- 15 million bitten by animals, mostly dogs, every year
- 30 000 human deaths from rabies annually

# WHY THIS TOPIC ?



Injuries have causes -- they don't simply befall us from fate or bad luck.

To prevent injuries it is necessary to have information about the factors that contribute to their occurrence.

# SNAKE BITE

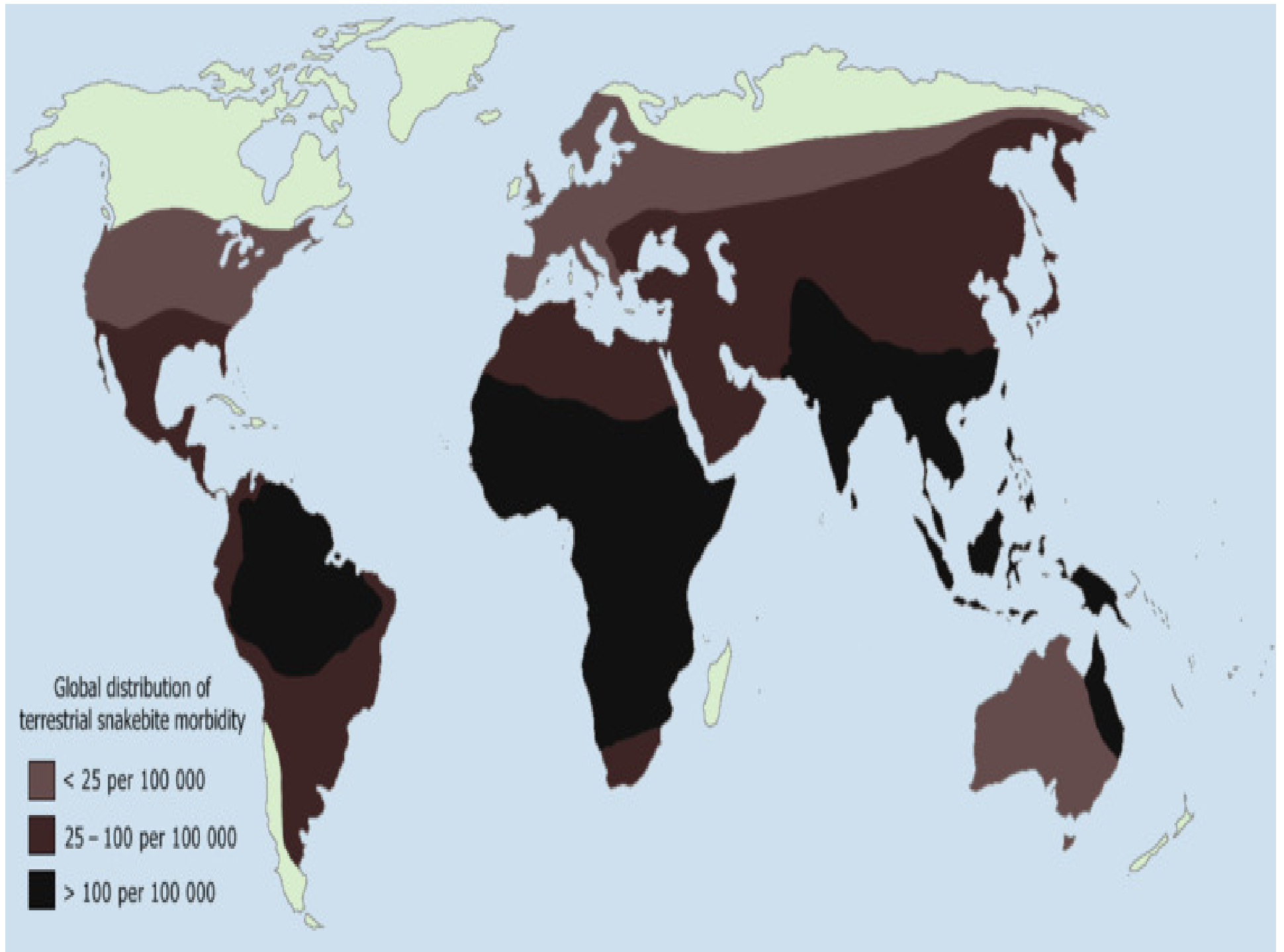


- Most snakebites are caused by non-venomous snakes
- Of all bites, envenomation < 20%
- Mortality 1-15%

# SNAKE BITE



- Occur most frequently in the summer season
- Agricultural and tropical regions report more snakebites than anywhere else
- Snake bites are most common to the lower extremities.
- Victims typically male between 17 -27 years of age





# Three types of venomous snakes that cause the majority of major clinical problems

viper



krait



Cobra



# Prevention



- Mechanized farming methods
- Use of protective footwear and clothing
- Most likely to bite when they feel threatened, are startled, provoked
- Have no means of escape when cornered

# Prevention



- It is important to tread heavily and cause loud ground noises
- When dealing with direct encounters, best to remain silent and motionless
- If the snake has not yet fled , step away slowly

# Prevention



- Do not reach blindly into hollow logs, flip over large rocks, or other potential snake hiding-places
- Snakes are likely to approach residential areas when attracted by prey
- Practicing regular pest control can reduce the threat of snakes considerably

# Haddon's matrix



## Two dimensions

- first - categorization of timing of injury into 3 levels:
- “**preexposure**” factors that influence the likelihood that a poisoning will occur
- “**exposure**” conditions that influence the exposure itself
- “**postexposure**” conditions that influence the consequences of the exposure once it has taken place

# Haddon's matrix



- Other dimension is classified according to:
- Host
- Agent
- Environmental factors that influence a poisoning occurrence

# Haddon's matrix



	Human	Agent	Environment
Pre event	Reaching blindly into hollow logs etc.	Manual farming methods	Summer season, agricultural region
Event	Not wearing protective footwear	<ul style="list-style-type: none"><li>• Making local incision</li><li>• Application of chemicals to wound</li><li>• Sucking wound site</li></ul>	Not practicing regular pest control
Post event	Pre existing diseases like bleeding diathesis	Reacting violently, panic	<ul style="list-style-type: none"><li>• Slow emergency response</li><li>• Non availability of ASV</li></ul>

# DOG BITE



- Most animal bites in India (91.5%) are by dogs, of which about **60%** are strays and **40%** pets.
- Bites to face, scalp predominate for child; upper extremity for adults
- Associated rabies occurs in  $8.1/10^6$  population

Delhi



Incidence of human deaths from rabies in Asia, 2004  
(WHO)

# Risk factors for dog bite

- Children, especially 0-5 years
- Households with dogs
- Certain dog breeds and dog characteristics
- Children and the elderly
- Alcohol consumption
- Male dogs
- Victim known to the dog



# Risk behavior



- Attempting to take food or water away
- Attacking
- Startling a resting or sleeping dog
- Approaching or touching a sick or injured dog
- Approaching dogs already fighting
- Behaving in a threatening/menacing manner around a puppy in the presence of adult dog
- Staring directly in eyes
- Running away



# Safety Tips



- Avoid dog ownership in house with young children
- Vaccination of pets
- Become familiar with mean or vicious breeds of dogs
- Train children on how to behave around dogs

# Safety Tips



- Teach them not to play too rough with dogs
- Never leave young children alone with dog
- Teach children never to go near a dog that's eating or gnawing on a bone or one they don't know
- Report vicious or stray dogs to animal control

# Safety Tips



- If attacked and nowhere to go, fall face down and cover your head and neck with your arms.
- Don't try to outrun
- If dog is threatening to bite, give something like shoe that it can bite instead
- Use low, firm voice to address threatening dog

# Haddon's matrix



	Human	Agent	Environment
Pre event (before attack)	Teach kids about safe behavior	Dog training	<ul style="list-style-type: none"><li>•Fencing for dogs</li><li>•Chaining them</li></ul>
Event (during attack)	<ul style="list-style-type: none"><li>•Not to run</li><li>•Protect head</li></ul>	Muzzle for dangerous dogs	Alarm system if fence open
Post event (after attack)	<ul style="list-style-type: none"><li>•General health status</li><li>•Age of victim</li></ul>	Report vicious or stray dogs to animal control, impound	<ul style="list-style-type: none"><li>•Fast emergency response</li><li>•availability of ARV</li></ul>

# LARGE ANIMALS



- Horse, donkey, cow, bull, ox, camel etc
- Particularly in rural areas
- Horse related (falls 63-90%)
- Cattle horn injuries (deep penetrating injuries)



# Horse related



- Deaths are relatively uncommon
- Most serious injuries are to the head
- Equestrian riding has higher serious injury rates
- Farm animals - rates largely unknown

# PREVENTION



- Correct riding gear helmets, stirrups for horse
- Adult supervision of children
- Proper training
- Careful while feeding, milking etc
- Run in zig zag course
- dehorning

# Scorpion Bite



- Envenomation
- CVS, CNS
- Scorpion stings, while painful, are rarely deadly
- Lower limb is most frequent site for bites -children
- Anti-venom is available
- Protective footwear and clothing in high-risk areas

# Bee sting

- Anaphylaxis
- death

## PREVENTION

- Destruction of bee hives in residential areas
- Cover the body as much as possible with clothing
- If single insect is flying around, remain still or lie face down on the ground.
- Swinging or swatting at may cause it to sting
- If attacked by several at same time, run



THANK YOU

