World Zoonoses Day – 2022






Organized by:

Division of Veterinary Public Health and Epidemiology
F.V. Sc & A.H., SKUAST-Jammu, R.S. Pura

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ZOONOSES

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The word 'Zoonosis' (Pleural: Zoonoses) is derived from Greek words: ‘zōon’ which means ‘animal’ and ‘nosos’ which means ‘disease’. So zoonosis is an illness that can be spread between animals and humans. World Health Organization (WHO) defines Zoonoses as "those diseases and infections which are naturally transmitted between vertebrate animals and man". The word ‘zoonoses’ was introduced by Rudolf Virchow in 1880. Zoonoses include only those infections where there is either a proof or a strong circumstantial evidence fortransmission between animals and man.

How many diseases of humans have origin from animals?

New and Emerging Infectious Diseases: Emerging and re-emerging diseases are a serious challenge to the animal and human health worldwide. The importance of zoonotic diseases can be gazed from the fact that out of 1415species known to bepathogenic to humans, 61% (868/1415) are considered to be zoonotic innature, and 175pathogenic species are associated with diseases considered to be ‘emerging’. Out of theseemerging pathogens, 75% (132/175) are considered as zoonotic (Taylor etal., 2001). The emergence and re-emergence of zoonotic diseases is not new, and over the past three decades the onset ofoutbreaks of infectious diseases emerging from animal reservoirs to infect humans has increased.For example, Ebola virus, highly pathogenic avian influenza (HPAI) viruses, and thecoronaviruses severe acute respiratory syndrome (SARS) coronavirus and Middle Eastrespiratory syndrome (MERS) coronavirus.

Many pathogens originate in wildlife and create havoc in the human populations. A novel SARS-CoV-2 is the recent example, that how a pathogen believed to be originated from wildlife have threatened the human life. Combined strategies and joint efforts involving scientific community across the disciplines are essential to mitigate the challenges of disease emergence before they enter human populations.

Socio-economic significance of zoonoses

Zoonoses have enormous socio-economic impact on human society. One of the classical examples is Rabies which is responsible for death of around 20000 Indians annually. Brucellosis is known to cause pyrexia of unknown origin in infected individuals and disease is important in some of the occupational groups including veterinarians and farmers. Japanese Encephalitis which is transmitted by mosquito is responsible for neurological disease in humans especially in children under 15 years of age. Japanese Encephalitis kills 1000-2000 persons annually and the frequent outbreaks are reported in eastern Uttar Pradesh. The zoonotic diseases like acute respiratory tract infection, dengue haemorrhagic fever, diarrhoeal diseases, hepatitis A, rabies, Japanese encephalitis, malaria, tuberculosis are among the top ten killer diseases of man in South

East Asian region (WHO, 1996). As about 80% of the population is rural, they are always under threat of acquiring certain zoonotic diseases such as brucellosis, leptospirosis and plethora of other diseases due to the intimate association with animals.

The impact on health and economy is discussed as below:

1. Losses from Zoonoses: Losses from zoonoses are attributed to
    - Treatment of sick persons i.e. medical cost
    - Economic cost in the control of "Zoonoses".
    - Drains on national exchequer by way of imports of livestock products and ban on exports.
    - In India – 3 million, in Europe – 1 million and in USA - 175 thousand persons receive post exposure anti-rabies treatment annually, which besides causing psychological stress and trauma also result in huge economic losses by way of mandayslosses and expenditure on manufacture of vaccines etc.
    - Expenses on surveillance mechanism e.g. diagnosis of animal diseases, detection of disease reservoirs, quarantine, inspection of foods of livestock origin, condemnation of animal products etc.
2. The undermining of animal health and productivity: loss of animal protein occurs in the form of meat, fish, egg, milk etc. According to one estimate there is annual loss of thirty million tons of milk due to animal diseases. This would have been enough to provide two glasses of milk daily to 200 million children

HOW ZOONOSES CAN BE CONTRACTED?

Transmission of "Zoonotic" diseases can occur:

- By direct contact with infected secretions or excretions of infected animals (e.g. Brucellosis, Q-fever)
- Through ingestion (e.g. foodborne zoonoses such as salmonellosis, Rotavirus infection)
- Through inhalation (e.g. Influenza, tuberculosis)
- Through Bites of animals (e.g. Rabies)
- Through arthropod vectors such as mosquitoes, ticks, mites, fleas etc.

OCCUPATIONAL ZOONOSES:

Zoonoses are important occupational hazards faced by agricultural, industrial, laboratory workers and animal handlers e.g. brucellosis and Q-fever in veterinarians and livestock raisers, bovine tuberculosis in farmers, anthrax in wool industry workers and livestock raisers, leptospirosis in rice field workers or cane cutters, listeriosis in agricultural workers, erysipeloid in butchers and fish handlers, creeping eruption in trench diggersetc. The 4th report of The Joint WHO-ILO Committee on Occupational Health (WHO-ILO, 1962) listed 19 human infectious diseases that are contracted principally through agricultural occupation. Some of these include-

anthrax, brucellosis, tuberculosis, Q-fever, leptospirosis, glanders, KFD, RSSE, JEV, rabies, RVF, plague, psittacosis-ornithosis, erysipeloid etc.

FOOD BORNE ZOONOSES:

Rapid industrialization, mass food processing and lack of proper food quality control pose newer challenges to public health scientists. The animals are reservoir of many infectious agents which can infect humans through consumption of contaminated food products. Of all the foodborne diseases, bacteria alone account for about 85% of the foodborne cases. Some of important foods borne diseases are due to *Salmonella, E. coli,Campylobacter*, *Staphylococcus, B. cereus*, *Clostridia*, *Aeromonas*, *Yersinia*, *Listeria* etc. It is very difficult to assess the true scale of the problem because of the lack of proper reporting. As per one estimate the actual incidence is 10-100 times (or even greater) than the actualreported. Recently another vulnerable group of population has assumed significance. This group includes sizeable number of immuno-compromised individuals (AIDS, transplant and those on immuno-suppressant drugs) and elderly people, which are at a greater risk of acquiring foodborne zoonoses than the general population.

1.1 Factors Influencing Prevalence/Emergence of Zoonoses

It is well known that diseases are multi-causal in nature; it is also true for zoonoses as well. Some of the factors that have contributed to emergence spread and prevalence of zoonoses are discussed as under-

1. **Ecological changes in man's environment:** With the expansion of human population man is forced to exploit the virgin territories and natural resource like harnessing the power of rivers, construction of roads highways, laying of pipelines through virgin or thinly populated areas, clearing or irrigating or cultivating new lands etc. This would lead to entering of humans in the unaccustomed ecosystem in which potential pathogens from part of the biotic community (natural focus). Such ecological changes may expose the man to risk of certain diseases like leptospirosis, tularaemia, louping ill, rabies, schistosomiasis, KFD etc. Large-scale expansion of agricultural and engineering resources such as construction of dams, artificial lakes, irrigation schemes, deforestations etc. all lead to changes into vectors and alterations in the population of reservoir animals with adverse health consequences.
2. **Increased movement of man:**In present days there is mass human movement across the globe and thus we can expect newer and newer zoonoses hitherto unknown in a place.
3. **Increased density of human population:**Due to ever increasing population there is growth of large human settlements (urban agglomerations) leading to a situation favoring the spread of zoonoses. Temporary congregation of people e.g. pilgrimages, tourist, refugees or disaster victims are often exposed to contaminated food or water and unhygienic sanitary situations thus exposing them to diseases like colibacilosis, salmonellosis, amoebiasis, shigellosis and giardiasis etc.
4. **Fluctuations in animal population:**The dynamics of wild, synanthropic and other animal populations including those of vectors may undergo changes due to changes in ecology, food availability etc.

5. **Increased trade in animal products:**Increased trade in animal products have led to increased exposure to animals and thus transmission of diseases to humans. e.g. tularemia, anthrax etc.
6. **Changes in food technology:**This has also resulted into emergence of new zoonoses e.g. anisakiasis and use of refrigerated transportation of entire fish.
7. **Transportation of animal reservoirs or vectors**: Aircrafts, ships, trains, vehicles have introduced animal reservoirs or vectors (mosquitoes, ticks) into a new area e.g. plague was introduced into Europe through ships carrying flea infested rats. In this way yellow fever, chikungunya fever, dengue fever can spread to newer areas.

Classification of zoonoses:

Zoonoses can be classified in many ways. One of the easy to understand classification is based on the infectious agent causing infection. Based on the infectious agent, the zoonoses are classified as:

- Bacterial zoonoses: anthrax, brucellosis, tuberculosis, leptospirosis, salmonellosis, Q-fever etc.
- Viral zoonoses: rabies, influenza, corona, Japanese Encephalitis etc.
- Parasitic: toxoplasmosis, echinococcosis (hydatid disease), taeniasis etc.
- Fungal zoonoses: histoplasmosis, cryptococcosis, superficial dermatophytes etc.

<u>Prevention of Zoonoses</u>

One may come in contact with animals in many places. This includes at home and away from home, in places like petting zoos, fairs, schools, stores, and parks. Insects, like mosquitoes and fleas, and ticks bite people and animals day and night. Thankfully, there are things you can do to protect yourself and your family from zoonotic diseases.

- Keep hands clean, washing your hands right after being around animals, even if you didn't touch any animals, is one of the most important steps you can take to avoid getting sick and spreading germs to others.
    - Always wash your hands after being around animals, even if you didn't touch the animals.
    - Many germs are spread by not washing hands properly with soap and clean, running water.
    - If soap and water are not readily available, you can use an alcohol-based hand sanitizer that contains at least 60% alcohol.
        - Because hand sanitizers do not get rid of all types of germs, it is important to wash your hands with soap and water if they are available.

- Know the simple things you can do to stay safe around your pets.
- Prevent bites from mosquitoes, ticks, and fleas.
- Learn more about ways to handle food safely—whether it's for yourself or your family, your pet, or other animals.
- Be aware of zoonotic diseases both at home, away from home (such as at petting zoos or other animal exhibits), in childcare settings or schools and when you travel.
- Avoid bites and scratches from animals.

ECHINOCOCCOSIS: AN EMERGING FOOD-BORNE PARASITIC ZOONOSES

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The parasitic diseases continue to be a significant health problem in both developed and developing countries. WHO estimates that one person in every four harbors parasitic worms. In the era of 'One Health' significance of Food- and waterborne infections have received considerable attention in the last decade. Some of these infections are well recognized, but are considered emerging because they have recently become more common (WHO, 2002), or are more detected because of better diagnostic tools and improved communication. Predominantly parasitic infections, such as Echinococcosis and toxoplasmosis has attained a greater significance of their high zoonosis impact. In this article these two diseases and their impact in socioeconomic setup of Indian context mainly focusing on prevention measures will be discussed.

Echinococcosis

Echinococcosis in humans occurs as a result of infection by the larval stages of taeniid cestodes of the genus *Echinococcus*. Six species have been recognized, but four are of public health concern: *E. granulosus* (which causes cystic echinococcosis), *E. multilocularis* (which causes alveolar echinococcosis), and *E. vogeli* and *E. oligarthrus* (which cause polycystic echinococcosis). Two new species have recently been identified: *E. shiquicus* in small mammals from the Tibetan plateau and *E. felidis* in African lions, but their zoonotic transmission potential is unknown. Several studies have shown that these diseases are an increasing public health concern and that they can be regarded as emerging or re-emerging diseases.

Hydatidosis/Cystic echinococcosis:

E. granulosus is a cestode causes hydatidosis, whose life cycle involves dogs and other canids as definitive hosts for the intestinal tapeworm, as well as domestic and wild ungulates as intermediate hosts for the tissue-invading metacestode (larval) stage. Transmission

of disease in intermediate hosts occurs by ingestion of food and water contaminated parasitic egg. Hydatid cyst developed in intermediate host is ingested through meat by definitive host.

Distribution

1. This disease is present throughout the world.
2. Children have a higher chance of getting an infection due to poor hygienic habits.
3. Human infection occurs accidentally by the feces of infected dogs or other herbivores.
4. This disease is quite common in India including UT of J&K.

Transmission Cycle*:

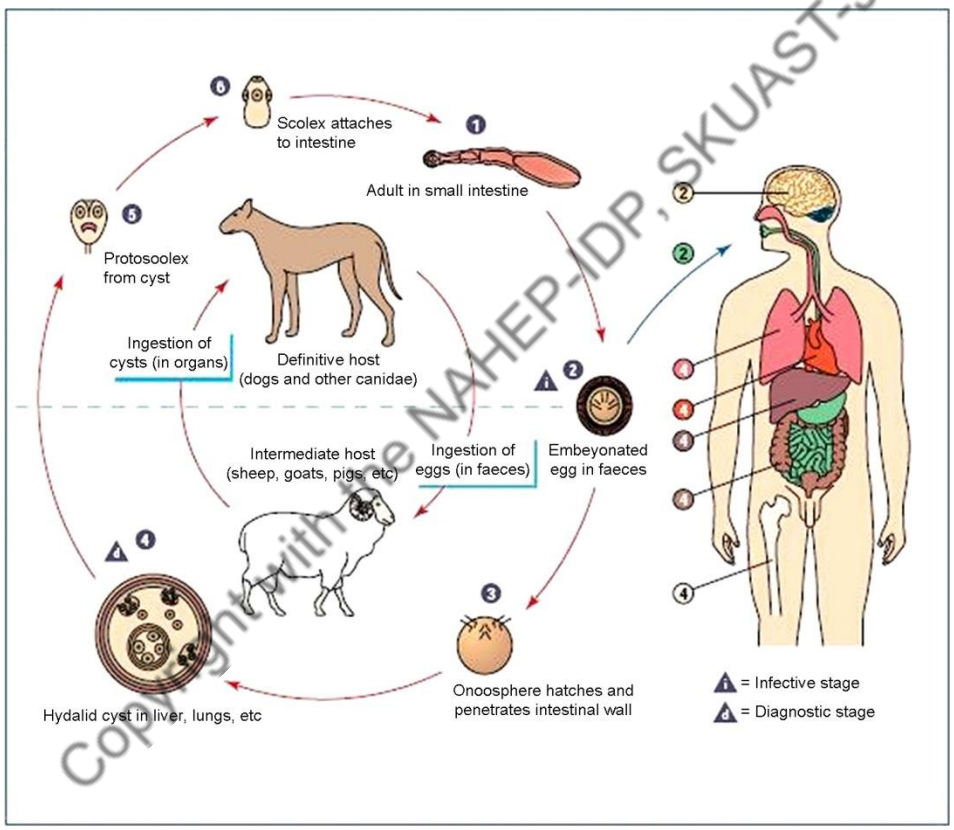

*Fig.1. Life cycle of **Echinococcus granulosus** (Reproduced from the Centers for Disease Control and Prevention at http://www.dpd.cdc.gov/dpdx/html/Echinococcosis.htm).

Disease distribution in UT of J&K:

A study conducted recently to determine the seroprevalence of hydatid infection in asymptomatic human beings in Kashmir Valley revealed that Out of 1,429 samples, 72 (5.03%)

were IgG positive by ELISA. Age <15 years, male gender, contact with dog, and rural residence were the most significant factors associated with the seropositivity. In order to have a definite occurrence pattern of hydatidosis among sheeps of Jammu region a retrospective examination of all visceral organs was conducted with a sample size of 1000 sheep at an organized municipal slaughter house of Jammu region. A total of 64 sheep were positive for hydatidosis with overall prevalence of 6.4 per cent. Lungs and liver were found to be most common predilection sites for the hydatidosis with figures 43.75% and 39.06%, respectively.

Signs and Symptoms

1. 10% of the cyst cause signs and symptoms.This depends upon the size and location of the hydatid cyst.
2. The patients are asymptomatic, and the incubation period may be in years when the cyst appears and is clinically diagnosed. There are nonspecific symptoms of: Nausea, Weight loss, Weakness.
3. Other symptoms are due to the pressure of these cysts. In the case of the liver cyst: The patient may have abdominal pain, Nausea and vomiting. There may be obstructive jaundice. In the case of the lung: There will be a chronic cough, chest pain and shortness of breath.
4. Rupture of the cyst naturally or by taking the sample may lead to anaphylactic shock.

Diagnosis:

1. A complete blood picture may show eosinophilia.
2. Direct microscopic examination for ova and parasites.
3. X-rays may show cysts in asymptomatic patients. The cyst shows a sharp outline and may see fluid levels.
4. Bone marrow biopsy.
5. CT scan or ultrasonography is helpful to find a hydatid cyst.

Treatment

1. Surgical removal of the operable cyst. This is the best choice of treatment.
2. In the case of inoperable cases can give: Mebendazole, Albendazole, Praziquantel.
3. Albendazole is given for a longer time to kill the cyst. This was better absorbed and penetrated the cyst wall. Now this drug is preferred to mebendazole.

   Albendazole is given as 10 mg/Kg body weight or 400 mg twice daily. The results for albendazole have been superior, probably because of its pharmacokinetic profile, which favors intestinal absorption and penetration into the cyst. The minimum duration of treatment is 3 months. Response to therapy can be judged by ultrasound or MRI, may be repeated at intervals of 3 months.
4. Praziquantel is protoscilocidal drug. It has a very good result when given with Albendazole.

Prevention

Cystic echinococcosis/hydatid disease occurs only when parasitic eggs released from an infected dog are swallowed by the intermediate host including human. So, it has to be prevented and following precautions may be taken-

1. Improve the hygiene of people handling the dogs.
2. Dog should not be fed with raw meat
3. Prevent access to dead stock or fresh offal-Access by dogs to dead stock or fresh offal can be from scavenging or by the deliberate feeding of meat, liver, lungs or even blood from the slaughtering process. Hydatid cysts, which can be in the carcass or have contaminated the meat or other material, may be eaten by the dog, causing it to become infected with the tapeworm.
4. Frequently treat the dogs in endemic areas.
5. Improve the ways for the disposal of the dog's feces.
6. Six weekly deworming of the dogs with praziquantel is very effective. When treating potentially infected dogs, take great care in disposing of the droppings for 2-3 days after treatment. Numerous eggs from dead and dying tapeworms will be present in the droppings Dispose of them by deep burial or burning. These eggs pose a health hazard because they are not affected by the treatment.

RABIES

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Rabies is an acute viral disease, which causes encephalomyelitis in virtually all the warm blooded animals including man. Disease is caused by a virus which is found in domestic and wild animals, and is transmitted to other animals and to humans through close contact with their saliva (i.e. bites, scratches, licks on broken skin and mucous membranes).

In most of the developing countries, dogs are the principal reservoirs of rabies (canine rabies) whereas wild animals such as foxes, racoons, bats and coyotes are important reservoirs of disease in developed countries.

Worldwide every year, 35000 - 50000 humans die of rabies. Tragically, out of these deaths around one-third (approximately 20000) deaths are reported in India only. In India, almost 1.8 million people annually receive post exposure prophylaxis against rabies following bite or exposure to rabid or suspected rabid animal. With the exception of Andaman & Nicobar islands and Lakshadweep islands, human cases of rabies are reported from all over the country. The cases occur throughout the year. 96% of the mortality and morbidity is associated with dog bites. Cats, wolf, jackal, mongoose and monkeys are other important reservoirs of rabies in India. Bat rabies has not been conclusively reported from India.

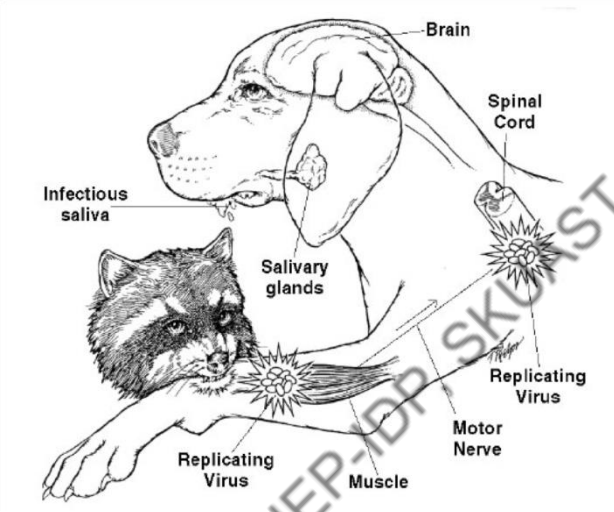
Rabies occurs in all continents with the exception of Australia and Antarctica. Several (>50) countries are currently free of rabies. Rabies virus belongs to the family Rhabdoviridae and genus Lyssavirus (Lyssa: Greek: rabies). This RNA virus is bullet shaped, round at one end and flat at the other. The virus is covered with a lipid envelope having spike like projections. The rabies virus is highly resistant against cold and dryness. However, the virus is highly thermolabile which means it easily gets killed by heat. The virus cannot withstand pH less than 4 or more than 10. It is killed by the action of oxidizing agents (sodium hypochlorite which is currently used in coronavirus), most organic solvents (phenol), surface acting agents, and quaternary ammonium compounds. It is also killed by ultraviolet rays of sunlight and X-rays. Soaps and detergents are effective against rabies virus because these are able to destroy lipid covering of virus.

Excretion of rabies virus: Virus is excreted by the rabid animal mainly in saliva. It is present in the saliva of the dogs for 2-3 days before the appearance of clinical features in dogs. It remains in the saliva till the animal dies. Death usually occurs within one week of onset of clinical manifestations.

Mode of transmission: Rabies virus is predominantly neurotropic (it loves nervous system) and kills the host in short period after it has entered the neurones. Before death, from the brain, virus reaches salivary glands and is excreted in saliva. The saliva gains entry into another host through

a preexisting breach in skin when mere licking or contamination is adequate or the bite of the rabid animal creates a mechanical breach of skin through which the rabies virus gains entry. Virus may be present in the saliva for many days before clinical signs appear.

Pathogenesis: On entering into human body, rabies virus multiplies at local site of inoculation prior to its spread towards brain via the nerves. Within the brain, virus spreads from infected to contagious cells. The movement of the virus is extremely slow which results into a long incubation period. This fact helps in initiating immunoprophylaxis(vaccination) even after the causative agent has invaded the body.



Incubation period: The incubation period is the time period between the entry of virus in the body to appearance of the first signs of disease. The average incubation period of rabies is between 30-90 days. Factors which may influence the length of the incubation period are: site of bite, the amount of virus in saliva of the bitting animal, the virus strain, and the age and immune status of the victim. Clinical signs appear quicker in case the bite is closer to brain and dose of virus in saliva is high. Incubation period as short as 10 days and as long as 2 years have been reported.

Clinical features in man: The first sign to appear is pain and tingling around the site of bite. This is seen in 35-65% cases. Hydrophobia (fear of water) is the best known symptom of this disease and is pathognomonic for rabies.

Rabies in dogs: After an incubation period of around 3 months (range 10 days to 6 months), dog may manifest one or moreof the following clinical features. There may be change in behavior of dog, change in bark tone, change infeeding habits, the animals may go off feed and eat abnormal objects. They may develop fever, vomiting,excessive salivation, paralysis of lower jaw, anxiety, restlessness, convulsions, paralysis leading to death within 5-7 days on onset of disease. There is however no hydrophobia in animals.

Rabies in dogs is also classified as dumb (predominantly paralytic manifestation with docile behavior ofanimal) or furious (mainly convulsions and aggressive behavior with greatly exaggerated bitingtendencies).

How to Prevent Rabies:

1. What to do when you come in contact with rabid animal or Rabid animal has bitten you: The contact with Rabid animals are divided into 3 categories: Category I, II and III

- Category I include: touching or feeding rabid animals, rabid animal licks on intact skin
- Category II include: nibbling of uncovered skin, minor scratches or abrasions without bleeding by rabid animal (exposure)
- Category III include: single or multiple transdermal bites or scratches, contamination of mucous membrane or broken skin with saliva from animal licks, exposures due to direct contact with bats (severe exposure)

The preventive measures used when we come in contact with a rabid animal are called Post-exposure prophylaxis (PEP). PEP includes following points:

- Wound management
- Passive immunization
- Active immunization

Wound management: Since the rabies virus enters the human body through a bite or scratch, it is necessary to remove as much saliva as possible from the wound. Removal of saliva will help in removal of virus from the wound. So wound should be washed immediately and gently with soap or detergent and flushing the wound with running water for 15 minutes. If soap and detergent are not immediately available wash with running water for at least 15 minutes. Avoid direct touching of wounds with bare hands. The application of soil, chillies, oil etc. is unnecessary and damaging. In case soil, chilies, oil etc. have been applied on the wound, enough gentle washing with soap or detergent should be done to remove them. It should be noted that the immediate washing of the wound is a priority. Suturing of wound should be avoided as far as possible. If unavoidable, minimum loose sutures should be applied after adequate local treatment along with proper infiltration of anti-rabies serum on wound. Inj. tetanus toxoid should be given to the unimmunized individual. To prevent sepsis in the wound, a suitable course of an antibiotic may be recommended.

Passive Immunization by rabies immunoglobulin: Passive immunization involves application of anti-rabies serum (Serum having antibodies against Rabies virus) is applied on the wound. It is must to use anti-rabies serum in case of category-III wounds

Active immunization: Active immunization involves the application of anti-rabies vaccines. In the present times, tissue culture vaccines are available in the market which are very safe to use in all persons. As recommended by the WHO Expert Committee on Rabies (1992), the course for

postexposure prophylaxis should consist of five injections: Day 0, 3, 7, 14 and 28. Day 0 is the date of first injection and not the date of bite. All cases of animal bites, irrespective of severity of exposure, require the same number of injections and dose per injection. Vaccines are applied on the deltoid region of body on arm. Gluteal region (on the back side of hip) is not recommended because the fat present in this region retards the absorption of vaccine and hence prevents the generation of optimal immune response. Vaccines are kept at temperature of 2-8^{O}C in the refrigerator. Vaccines are safe for pregnant ladies and lactating mothers.

Wound Category-wise the PEP indicated is shown below:

Table: Categories of contact and recommended post-exposure prophylaxis (PEP)	
Categories of contact with suspect rabid animal	**Post-exposure prophylaxis measures**
Category I - touching or feeding animals, animal licks on intact skin (no exposure)	Washing of exposed skin surfaces, no PEP
Category II - nibbling of uncovered skin, minor scratches or abrasions without bleeding (exposure)	Wound washing and immediate vaccination
Category III - single or multiple transdermal bites or scratches, contamination of mucous membrane or broken skin with saliva from animal licks, exposures due to direct contact with bats (severe exposure)	Wound washing, immediate vaccination and administration of rabies immunoglobulin

World Zoonoses Day – 2022

List of UG Students

S no	Name of Student	Regd. No:	Signature
1	Yogi Shankar	A-2017-V-14-B	Yogi
2	Deepinderjit Singh	A-2017-V-12-B	Deep
3.	Javeed Baigh	J-17-BV-1090	
4	Muzamil Raja Mir	J-17-BV-1072	
5.	Khalid Umar	J → 1088	
6.	Balrishpreet Singh Panwar	A-2017-V-10-B	
7.	Gurjit Singh Bhullar	A-2017-V-16-B	Gurjit Singh
8.	Harbir Singh	A-2017-V-[illegible]-B	Singh
9.	Sakshi	J-18-BV-1210	Sakshi
10.	Upkar Kaur	A-2017-V-60-B	Upkar
11.	Aishna Sood	A-2017-V-02-B	Aishna
12	Anupam Sharma	A-2017-V-08-B	
13.	Aditya Mahajan	A-2017-V-01-B	
14.	Tania Saini	J-17-BV-1093	Tania
15	Mandeep Nanda	J-17-BV-1066	Mandeep
16.	Ramneet Kaur	J-17-BV-1126	Ramneet Kaur
17	Mehtab Singh	J-17-BV-1127	

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List of Teachers.

S.No	Name	School Name	Phone number	Signature
1.	Kulbir Singh	GPS Abdullian	9797324390	
2.	Wakil Singh	GPS Abdullian	9419181278	
3.	Surinder Kumar	MS Bera	9205343666	
4.	Jail singh	MS Bera	7051229844	
5.	Kanhaiya Lal	GPS Bokri	8803642094	
6.	Darshan Lal	GPS Bokri	9697128346	
7.	Bishan Dass Chowdhary	GPS Chak Jajuia	9469514367	
8.	Dalip Kumar	PS Paswalgarh	8716025043	
9.	Surjit Kumar	GMS Drawptey	9906241549	
10.	Om Parkash	BPS Fatehpur Brahamana	8492035221	
11.	Darshan Lal	GPS Gharaniwala	9469860124	
12.	Govind Kumar	GPS Khamb	9469228035	
13.	Amrik Choudhary	GPS Basti Korotana	9419129331	
14.	Parishat ram	PS Korotana Kalan	9906024679	
15.	Ashwani Kumar	GPS Korotana Khurd	9906082105	
16.	Sanjiv Kumar	GPS Kothey Bure De	9596740220	
17.	Surinder Singh	MS Suchetgarh	7051276398	
18.	Devi Dayal	MS Talhar	99060666342	
19.	Gulshan Kumar	GPS Tohana Tibba	9622154772	
20.	Kanwal Raj	PS Abdal	9469241031	