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ABSTRACT

Zoonoses, diseases transmitted between animals and humans, constitute a significant public health concern globally. Originating from the Greek words "Zoon" and "noses," meaning animals and sickness, the World Health Organization defines zoonosis as infections transferred between people and animals. Approximately 61% of human infectious diseases stem from zoonotic sources. Animals, serving diverse roles in human life, may harbor harmful germs capable of causing zoonotic illnesses, even when asymptomatic. Wild animals, including mammals, amphibians, fish, birds, and reptiles, act as reservoirs for zoonotic pathogens, influencing transmission patterns affected by climatic parameters. This chapter explores major bacterial, parasitic, viral, and fungal zoonotic diseases, focusing on Anthrax, Brucellosis, Salmonellosis, Toxoplasmosis, Trypanosomiasis, Rabies, Crimean-Congo Hemorrhagic Fever (CCHF), Dermatophytosis (Ringworm), and Histoplasmosis. Each disease's transmission, symptoms, prevention, and control measures are discussed in detail. Prevention strategies include biosecurity measures, vaccination, vector control, and public awareness. Additionally, the abstract emphasizes the importance of a One Health approach, recognizing the interconnectedness of human, animal, and environmental health. Understanding these zoonotic diseases, their origins, drivers, and prevalence is crucial for managing emerging infectious diseases and preventing epidemics and pandemics. By exploring various disease types and their implications in different communities, efforts can be directed towards effective prevention and control strategies, ultimately safeguarding both human and animal populations.

Keywords: Zoonosis, One Health, Anthrax, Brucellosis, Rabies

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1. INTRODUCTION

Zoonosis is a word that originated from the Greek word “Zoon”, which suggests animals, and “noses”, refers to sickness. World Health Organization (WHO), suggests that every infection or disease that's normally spread from people to animals or from animal to human will be recognized as zoonosis (WHO 2020). Almost 61% of infectious diseases in human are from zoonotic sources (Taylor et al. 2001). There are over 200 known sorts of zoonoses. Zoonoses include an expansive rate of unused and existing maladies in people. A few zoonoses, such as rabies, are 100% preventable through immunization and other strategies (Acha and Szyfres 2005).

Numerous people in their everyday life deal with animals, both far from home and at home. Worldwide, animals give livelihoods, travel, sport, nourishment, fiber, companionship, and education to people (Steffens and Wilson 2012).

Occasionally, animals carry harmful germs that can infect humans. Germs responsible for causing Zoonotic illnesses have the capacity to produce many different sorts of infections in animals and people, considering infections from slight to serious illnesses and even passing. Sometimes asymptomatic animals even when they have germs can produce sickness in people, relying on the zoonotic illnesses (Acha and Szyfres 2005).

Unpredictably, wild animals are associated with people, domesticated creatures, and subsequently straightly contribute to the transmission and support of diverse irresistible infections, (Kruse et al. 2004). Wild creatures such as warm-blooded animals, amphibians, fish, birds, and reptiles act as a reservoir of zoonotic pathogens with the potential to transfer to people or other hosts. Climatic parameters such as raindrops, humidity, temperature, and by the nature of germs can affect the transmission designs of natural life zoonoses (Thompson and Polley 2014).

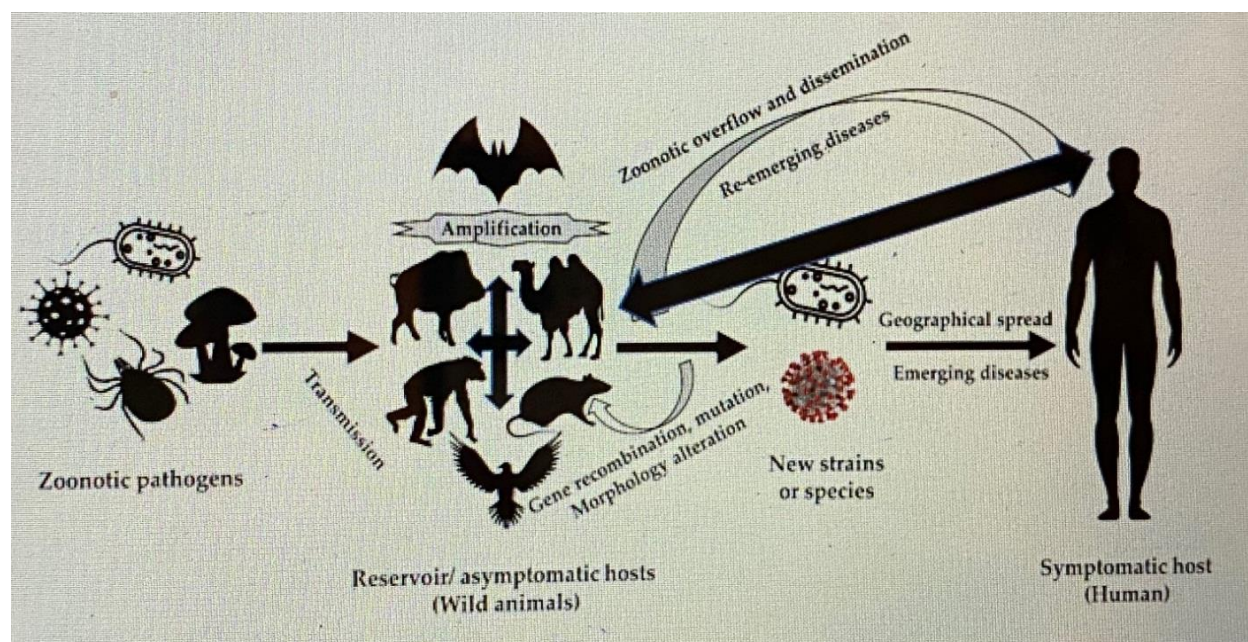


Fig 1: Illustrates the inclusion of wild creatures within the transmission and enhancement of causative operators of the rising and re-emerging of Zoonoses (Kruse et al. 2004; Cupertino et al. 2020). (Rahman et al. 2020).

Globally, Zoonotic diseases are very common. Researchers evaluate that more than 6 maladies out of every 10 known infectious in individuals can be transferred from animal, and in human 3 diseases out of every

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4 new or emerging infectious diseases come from animal. Center for Disease Control and Protection has been working 24/7 to keep people from zoonotic diseases (Steffens and Wilson 2012).

In the emergence of managing emerging infectious diseases (EID) including zoonoses, and eliminating the risk of them which have been epidemics and pandemics, we need to search for their various types, their origins, their drivers, and their importance in different communities (United Nations Environment Programme, 2020). Unsurprisingly, livestock, domesticated wildlife, and pets are the large proportion of animal involved in the history of zoonotic diseases or current zoonosis are domestic, with high contact rates. Extremely the emergence of the latest wildlife Zoonosis is rare but can be a very significant (United Nations Environment Programme, 2020).

1.1. MAJOR BACTERIAL ZOOTIC DISEASES

vectors play a critical part in the transmission of different infections to people and in numerous cases, they facilitate the spread of pathogens originating from wild creatures. The positive affiliation between vectors and people in impacting pathogen differences was, to begin with, hypothesized a long time prior (Robert and Brown 2004). Approximately 60% of human irresistible infections originate from vertebrate creatures (Klous et al. 2016). Coordinate human contact with has extended with the presentation of taming of distinctive animals (Pearce-Duvet 2006).

Sheep, goats, cattle, cats, steeds, pigs, pooches, and other performance as supplies of pathogens of residential zoonoses and can spread the maladies to people (Rahman 2021). Cases of zoonotic diseases that can be transmitted to people from residential creatures include balantidiasis, ancylostomiasis, toxocarasis, campylobacteriosis, leptospirosis, bacillus anthracis, Q fever tuberculosis, brucellosis, toxoplasmosis, listeriosis, bovine pustular stomatitis, rotavirus contamination, and rabies (Rahman 2021).

Worldwide, there are major different bacterial zoonotic illnesses, but few of them with a pretty introduction regarding their cardinal symptoms, transmission, and most important the methods of their prevention and control (monitoring) would be discussed.

1.1.1. ANTHRAX

Bacillus anthracis is a bacterial contamination caused by the high-impact, spore-forming, Gram-positive organism, found all through the world. It occurs in residential (such as sheep, goats, and cattle) (Zhang et al. 2022). *Bacillus anthracis* isn't transported from individual to individual. Transmission occurs in one of four ways, and signs and indications be able to change based on how *Bacillus anthracis* inserts the body: Through breaks within the skin. Cutaneous *bacillus anthracis* produces swelling around the sore, an effortless skin sore (ulcer) with a dark center, and causes rankles or bumps on the skin. The sore is ordinarily on the confront, neck, arms, or hands (Steffens and Wilson 2012). In animals, the infection advances very quickly, and commonly no clinical signs are watched some time recently passing. Pastures get sullied with bacillus anthracis spores and Animals get to be contaminated by nourishing on contaminated pastures (Zhang et al. 2022). The transmission of Anthrax from animals to human is described in Fig. 2 (Steele 2016).

2. BIOSECURITY, PREVENTION, AND CONTROL FOR INDIVIDUALS; THE VETERINARY AUTHORITIES ORDERED CONTROL MEASURES

1. Avoid examination of (suspected) infected carcasses.
2. A boycott on the butchering of debilitated creatures and disallowance of the butchering of dead and debilitated creatures.

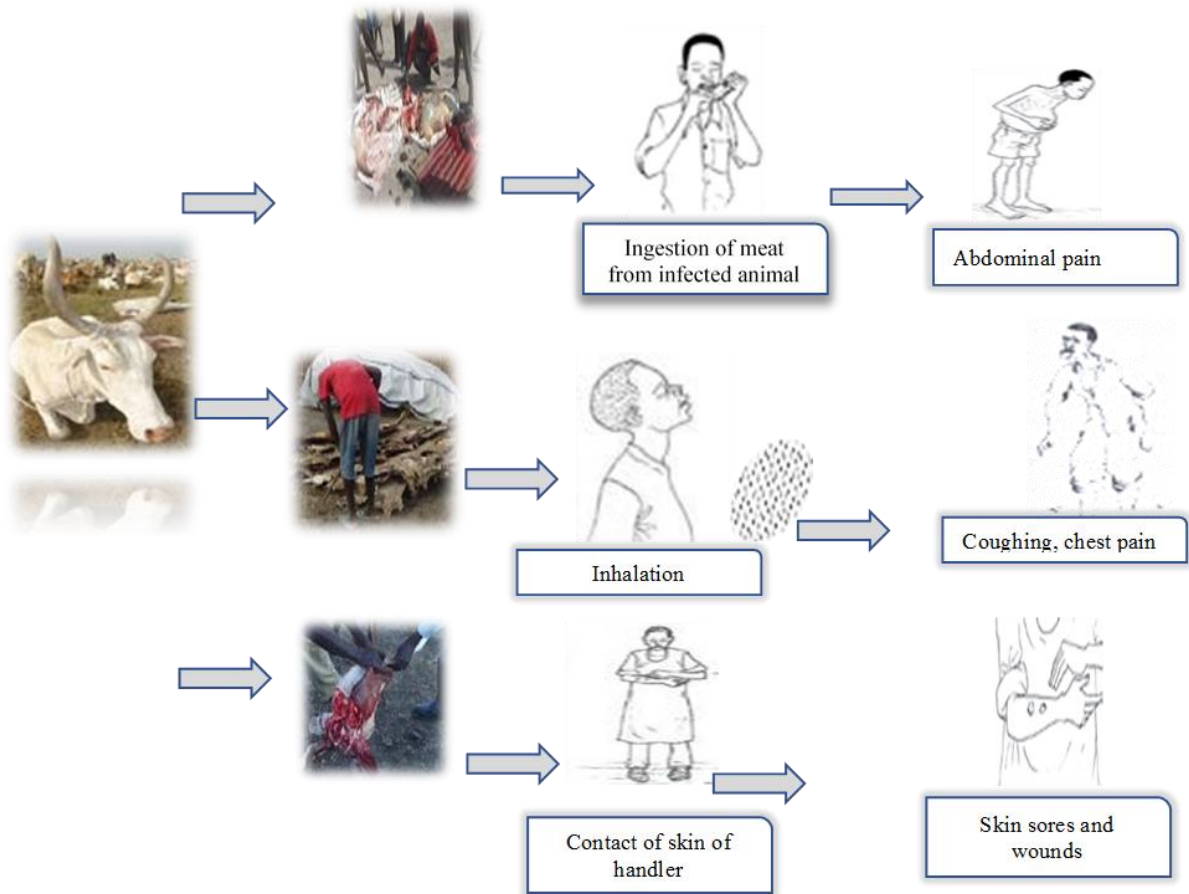


Fig. 2: Description of the methods of Anthrax Transmission to people.

3. Disallowance of the utilization of drain and dairy items, or meat, skin, and other items, as well as with clinical signs of ailment or suspected of contamination,
4. A concise guide for emerging infectious diseases and zoonoses
5. Avoid movement of livestock from affected premises during an outbreak.
6. Dominance or control dust in industry handling wool or hides.
7. Disinfect and wash wool/hair from endemic areas (e.g., with 10% formalin).
8. livestock (cattle, sheep, goats, and Equidae) in endemic areas must be vaccinated.
9. Creatures suspected to have died bacillus anthracis ought to be buried 6 feet profound or burned.
10. Dead creatures ought to not be cleared out to break down within the open touching regions
11. Suspected cases of bacillus anthracis ought to be detailed expeditiously to the veterinary administrations.

Overall, prohibit the use of meat and bone meal as ruminant feed, as these are potential sources of anthrax bacteria.

2.1. BRUCELLOSIS

Brucellosis is an endemic zoonotic disease in Asian and African countries and has a significant impact on both animal and human health. It still remains as one of the major public health concerns throughout

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developing countries, accounting for an annual occurrence of over 500,000 cases (Pappas 2002). The malady influences sheep, goats, cattle, pigs, and a few further creatures. It can be able to be passed to individuals by means of coordinated contact with animals or through drinking unpasteurized drains from a tainted animal. Classically, tall fever spikes happen each evening, subsequently the title “undulant” fever. In animals, the microscopic organisms basically influence regenerative organs and are found in expansive concentrations within the uterus of contaminated females. In human, the malady presents as a generalized condition (Steffens and Wilson 2012).

3 BIOSECURITY, PREVENTION, AND CONTROL OF BRUCELLOSIS(UNITED NATIONS ENVIRONMENT PROGRAMME 2020)

1. Animals ought to be appropriately assessed before recently butchering to guarantee no signs of Brucellosis.
2. Non-assessed meat ought to not be taken care of at home.
3. Pasteurized or bubbled drain and dairy items from dairy animals, sheep, and goats only could be utilized.
4. Guarantee meat is completely cooked.
5. Dairy items ought to be arranged as they were from appropriately heated/pasteurized milk.
6. Never suckle milk specifically from the nipples of a goat, sheep, or dairy animal.
7. Prematurely ended material or after-birth ought to never be taken care of without defensive arm sleeves.
8. Wash hands and arms altogether after taking care of births, premature births, and meat.
9. Suspect contaminated fabric ought to be burnt.
10. Suspect cases ought to be detailed instantly
11. In districts where the predominance of brucellosis is tall, guarantee agriculturists and slaughterhouse specialists are mindful of the dangers of taking care of creature tissue, and give enlightening in infection-control hones to play down the hazard of introduction.
12. Bury disposed of the creature’s remains.
13. Put in place uncommon safeguards for research facility specialists.
14. Animal brucellosis is best avoided by cautious group administration and cleanliness. Immunization is valuable for the avoidance and monitoring of disease. Destruction can be only accomplished by test-and-slaughter joined with successful avoidance measurements and control of creature development.

3.1. SALMONELLOSIS

Salmonellosis is a zoonotic disease caused by bacteria called salmonella. Worldwide, Salmonella is the most prevalent in impoverished areas that are overcrowded with poor access to sanitation. To date, the highest incidences of typhoidal Salmonella infection in the world occurred in southcentral Asia, southeast Asia, and southern Africa. Salmonella infection is one of the foremost common and broadly conveyed food-borne illnesses. It regards as a major public well-being burden and speaks to a critical cost in numerous nations. Microbes of the Salmonella species include *S. enteritidis*, *S. typhimurium*, and more than 2500 known types or serotypes worldwide (Vos et al. 2017). Salmonella spp. are highly adapting pathogens to humans and animals. Yearly assessed that tens of millions of human cases happen around the world and the illness comes about in more than 100 000 deaths.⁸³

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In spite of the fact that episodes of salmonellosis have been detailed for decades, it is considered a developing malady since it has as of late expanded in rate in numerous landmasses. From the beginning of 1990s, strains of salmonella that are safe to the extent of antimicrobials have risen and undermined to gotten to be a genuine open well-being issue. (Robert and Brown 2004; Taib and Abdulrahman 2022).

Salmonellosis is basically transmitted through the defilement of nourishments, nourishment utensils, nourishment devices, and nourishment hardware by fecal fabric. Destitute administration of human and creature waste is essential to calculate the transmission of these infections (Steele 2016). The symptoms of disease include vomiting, abdominal pain, headache, fever and diarrhea (Taib and Abdulrahman 2022).

4. BIOSECURITY OF THE CONTROLLING OF SALMONELLA ILLNESS(STEELE 2016; CUPERTINO ET AL. 2020)

1. Cook poultry and eggs completely.
2. Don't consume in part baked eggs with runny yolks and don't expend meat that's pink or ruddy after cooking unless persuaded of the new and secure source of the items.
3. Secure food-handling procedures and exercise great individual hygiene and
4. Clean water and cleanser should be used sometime recently while eating or cooking, and after utilizing the latrine.
5. Avoid wild feathered creatures from blending with poultry on ranches and Control rodents.
6. In poultry breeding farms Salmonella testing ought to be conducted.
7. The milk ought to be pasteurized or bubbled sometime recently utilization.
8. Food handlers and the public ought to be taught the dangers of salmonellosis contamination.
9. Always wash your hands after handling animals or animal products.

4.1. MAJOR PARASITIC ZOOONOTIC DISEASES

As human pathogens, there are a vast number of parasitic zoonoses such as cryptosporidiosis, toxoplasmosis, and leishmaniasis, trypanosomiasis that have picked up in significance, and this is due to their capacity to cause infection in patients with safe concealment due to HIV. The larger part of the classic parasitic maladies due to helminths, trematodes, cestodes, pentastomids, and protozoa are zoonotic (Weiss 2008). Ignored parasitic zoonoses (NPZ) are a bunch of maladies including trichinellosis, echinococcosis, cysticercosis, and foodborne trematode diseases that proceed to put critical burdens on a few populaces around the world. Control and anticipation of these illnesses require intersectoral collaboration among the open well-being, creature well-being, nourishment security, and WASH divisions (Weiss 2008; Mertz 2016).

4.2. TOXOPLASMOSIS

Toxoplasma infection or Toxoplasmosis is an infestation caused by a parasitic protozoon *Toxoplasma gondii*, ordinarily spread from creatures to people. The condition influence cats, human, sheep, goats, pigs, cattle, rodents, fowls that bolster on the ground, and reptiles. Cats ended up tainted by eating these little birds and warm-blooded animals and after that passing oocyst in their defecation, which are virulent to human. It can have extreme results in pregnant ladies and people with a compromised resistant framework. In both cats and human, invasion happens without clinical signs in typical people. Signs create in people with discouraged insusceptibility (Steele 2016).

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Ingestion of undercooked, sullied meat could be the pathway of disease transmission as well as, eating without washing hands completely, after incidentally or unconsciously dealing with sullied nourishment. Also eating nourishment sullied by blades, cutting sheets, utensils, and nourishment that has had contact with crude, sullied meat. Furthermore, drinking water or drain is sullied by *Toxoplasma gondii* (Robert and Brown 2004).

5. BIOSECURITY, PREVENTION, AND CONTROL OF TOXOPLASMOSIS (UNITED NATIONS ENVIRONMENT PROGRAMME 2020)

1. Don't eat crude or improperly cooked meat.
2. Don't drink unpasteurized milk.
3. Don't eat unwashed natural products and vegetables.
4. Wash hands and nourishment planning surfaces with warm foamy water after dealing with crude meat and Wash hands sometime recently eating (particularly for children).
5. Don't drink water from the environment unless it is boiled.
6. Don't nourish crude meat or undercooked meat to cats. Moreover, don't provide them unpasteurized milk.
7. Don't permit cats to chase or meander.
8. Don't permit cats to utilize a plant or children's play region as their location.
9. Pregnant ladies, and people with smothered resistant frameworks, ought to not clean the litter destinations of cats.
10. Control rat populaces and other potential middle hosts.

5.1. TRYPANOSOMIASIS

Trypanosomiasis (Sleeping sickness) are maladies caused by blood parasites. Zoonotic Trypanosomiasis in Eastern Africa, caused by *Trypanosoma rhodesiense*. In West Africa, another shape of zoonotic Trypanosomiasis happens and is caused by *Trypanosoma gambiense*. In animals, zoonotic Trypanosomiasis in Eastern Africa happens in Cattle, elands, and other wild ruminants with cloven hooves. Other species of trypanosomes contaminate and cause illness in cattle, sheep, goats, pooches, cats, steeds, camels, and other wild creatures but are not zoonotic. The cardinal sign of this infestation is sleeping without treatment and the sick person eventually dies (Franco et al. 2022).

6. BIOSECURITY, CONTROL, AND PREVENTION OF TRYPANOSOMIASIS (FRANCO ET AL. 2022)

1. Look for restorative consideration instantly when debilitated
2. Maintain a strategic distance from bites of the tsetse fly
3. In animals utilize of insect repellents such as pyrethrins and counting pour-ons offer assistance keep flies away.
4. A critical epidemiological challenge at the end is the part that supplies such as asymptomatic human carriers and non-human creatures might play in keeping up or rekindling transmission.

6.1. MAJOR VIRAL ZOONOTIC DISEASES

Warm-blooded animals, reptiles, fowls, and likely amphibians are stores or increasing hosts for viral zoonotic diseases. Regularly, these infections cause small or no obvious illness in their non-human vertebrate hosts. A few viral zoonoses have exceptionally constrained host ranges; others may contaminate a wide run of vertebrates. In man, the disease may change from unapparent to lethal

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malady. Both modern and ancient viral zoonoses are particularly critical in rising and reemerging infection illnesses. The spreading of zoonotic infections may happen in a multiplicity of courses (Reed 2018). They incorporate direct (e.g., rabies infection) or indirect (e.g., hantavirus) contact; “nosocomial” (e.g., Ebola infection); “aerosol transmission” (SARS coronavirus); “vertical” (in utero) (Zika infection); and “vector- or arthropod-borne” (e.g., yellow fever infection and West Nile infection). Zoonotic viral illnesses happen on each landmass but, maybe Antarctica. Around the world, a few are around, in a variety of environmental settings. Others are found as it were in exceptionally restricted ecologic and geographic foci. In spite of the fact that hundreds of infections are zoonotic, the significance of numerous of these infections has not however been set up. A few of the vital viral zoonotic illnesses will be talked about briefly (Reed 2018).

6.2. RABIES

It causes anxious framework infection that closes in passing. Animals can get to be contaminated without apprehensive framework infection, develop antibodies, and survive, but play no part in transmission. All around the world classical rabies is found but more infection in Britain, the Hawaiian Islands, Australia, Antarctica, and Modern Zealand. Spreading happens by the nibble of a tainted creature. Vaporized (droplet) transmission is uncommon. The saliva of infected animals is highly infectious if it comes into contact with the wound. In tropical developing nations Dog is the most supplied where >99% of all human cases happened. transmitted through bites of infected dogs, cats, bats, wild foxes, squirrels, horses, cattle, monkeys, and other animals (Reed 2018).

7. BIOSECURITY, PREVENTION, AND CONTROL OF RABIES (STEELE 2016; REED 2018)

1. Dogs that appear signs of rabies ought to be slaughtered promptly. Report suspected out-of-control pooches to specialists / veterinary administrations instantly.
2. In regions where rabies is endemic, the dog populace ought to be vaccinated routinely and labeled for ease of recognizable proof.
3. Never throw sticks, stones, or other objects at unusual dogs.
4. Wash dog bite wounds altogether with water and cleanser or cleanser, at that point apply disinfectant such as iodine.
5. Carcasses should be disposed of safely and away from the reach of dogs, cats, and other scavengers.
6. Animal well-being laborers ought to guarantee legitimate control of dogs and cats during taking care of them.
7. Creature well-being specialists ought to ideally get scheduled inoculation against rabies.
8. Education and Public Awareness on rabies prevention and control.
9. Dogs without a vaccination certificate can also be restricted within a country as a control measure.

7.1. CRIMEAN-CONGO HEMORRHAGIC FEVER (CCHF)

Narivirus or CCHF is a zoonotic tick-borne viral infection, which moves through the normal world in an enzootic cycle that includes vertebrates, ticks, and other ticks. Ticks of the class Hyalomma serve as both vectors and stores of the virus, and the spread of the disease happens through human-human contact or contact with the blood of the asymptomatic animals (Fig. 3). The major complications of CCHF incorporate hepatitis, fast kidney weakening, and aspiratory disappointment or sudden liver disappointment, which may lead to passing (Messina et al. 2015; Mohammed et al. 2022).

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8. BIOSECURITY, PREVENTION, AND CONTROL OF CCHF; (MESSINA ET AL. 2015; SORVILLO ET AL. 2020)

1. The foremost effective repellent for avoiding tick nibbles is an Insect repellent that contains N, N-diethyl-m-toluamide, commonly known as DEET.
2. Gloves and other defensive clothing are prescribed for animal specialists.
3. People ought to maintain a strategic distance from contact with the patients or with the blood and body liquids of wiped-out animals.
4. In healthcare settings, Strict adherence to infection-control safety measures is exceptionally critical. Healthcare laborers who have had contact with tissue or blood from patients with suspected or affirmed CCHF ought to be taken up with everyday temperature and indication observing for at slightest 14 days after presentation.
5. Open instruction almost the dangers of tick bites and individual assurance is fundamental.
6. In the interim, there's no secure and successful antibody accessible against this infection for human and creatures to utilize. Subsequently, as it were the method to control the rise of infections is through outside parasitic medications against mindfulness, ticks, and secure butchering methods at authorized abattoirs.

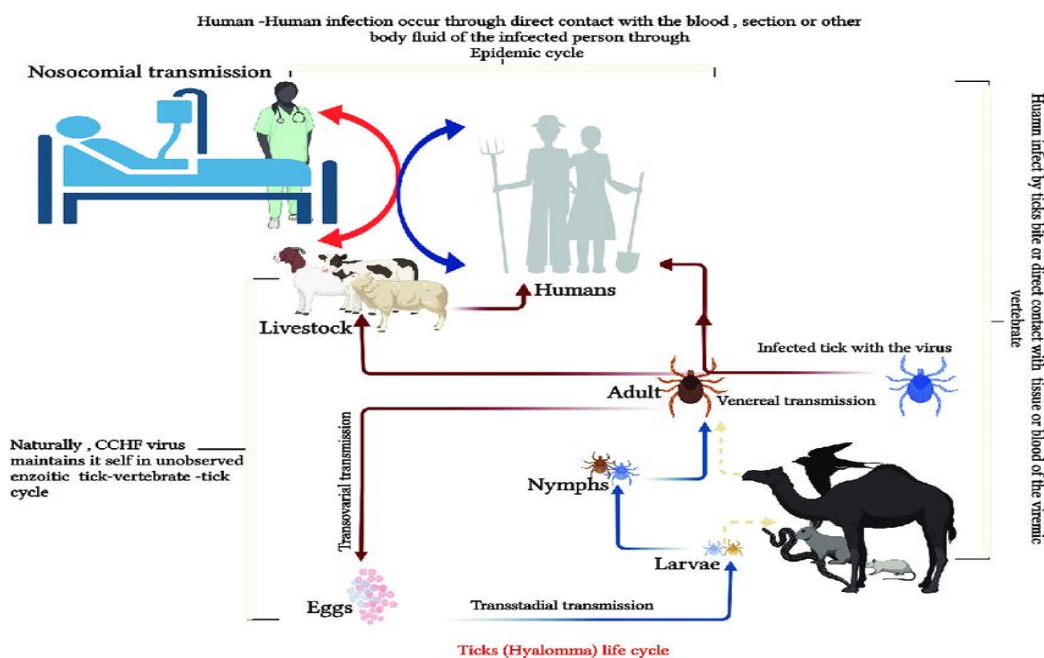


Fig. 3: Ticks (*Hyalomma*) life cycle (Mohammed et al. 2022).

8.1. MAJOR FUNGAL ZOOONOTIC DISEASES

Globally, fungal diseases related to zoonotic transmission are a critical public well-being issue. An amount of these diseases are among the bunch of foremost common fungal illnesses, such as histoplasmosis, dermatophytosis, and sporotrichosis (Sorvillo et al. 2020). Zoonotic fungi can be actually spread between animal and people, and in a few cases cause critical public well-being issues. It is, in any case, notable that a few contagious illnesses with zoonotic potential have needed satisfactory consideration in universal open well-being efforts, driving to inadequate consideration of their preventive methodologies (Sorvillo et al. 2020).

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8.2. DERMATOMYCOSES (RINGWORM)

Dermatomycosis (ringworm) could be a major fungal zoonotic illness conveyed around the world and caused by fungi of three genera (*Trichophyton*, *Microsporum*, and *Epidermophyton*), referred as dermatophytes. Ringworm is an infection of the hair, skin, and nails, which is caused in most cases by dermatophytes, and in rarer cases by yeasts and molds. Globally, fungal diseases of the skin are the foremost habitually happening infectious illnesses (Mukrimaa et al. 2016).

9. BIOSECURITY, PREVENTION, AND CONTROL OF THE RINGWORM

The stages for satisfactory Veterinary Public Health (VPH) activity, as concocted by WHO specialists (Mainzer et al. 2002; Mukrimaa et al. 2016) and tried by particular down-to-earth measures in several circumstances, have been distinguished. The taking after operational arrangements has been recognized as appropriate, successful strategies of zoonoses control:

- Observation (Dermatomycoses must always be treated).
- Control of animals
- Successful therapy for fungal diseases is a rapid diagnosis and pathogen typing.
- Control of infective media

Fig. 4: illustrate the importance of one health regarding safe ecosystem.

9.1. HISTOPLASMOSES

It is a zoonotic fungal disease that is associated with bat guano (stool) and could be a sort of infection of the lung. Breathing in *Histoplasma capsulatum* contagious spores is the causative factor of the fungal disease. The spore can be found within the droppings of bats, in soil, and in feathered creatures. Individuals with weaker safe frameworks may involvement serious issues. The infection may advance and spread to other regions of the body (Seyedmousavi et al. 2015). 10 to 15 percent of cases of histoplasmosis have been detailed as skin injuries that have spread all through the body (Mazi et al. 2022). Fig. 5 demonstrate the pathway of histoplasmosis transmission.

10. BIOSECURITY, PREVENTION, AND CONTROL OF THE HISTOPLASMOSES

It's difficult to maintain a strategic distance from breathing in *H. capsulatum* organism in case you live in a range where it's common. Whereas not completely preventable, there are a few steps you'll be able to take to diminish your chance of histoplasmosis:

1. Maintain a strategic distance from zones where you'll be uncovered to dirt or dust, particularly in zones where bats or feathered creatures live.

In the event that your work or side interests uncover you to soil that's likely to have *H. capsulatum*, use an N95 respirator veil to assist channel the air you breathe.

11. CONCLUSION

Wild animals, acting as reservoirs for zoonotic pathogens, contribute to the transmission of infectious diseases. Climatic factors further influence transmission patterns. Major bacterial zoonotic diseases, transmitted through vectors, involve animals such as sheep, goats, cattle, cats, horses, pigs, dogs, and more. Specific diseases include anthrax, brucellosis, and salmonellosis. Prevention measures range from proper handling of carcasses to vaccination. Parasitic zoonotic diseases, caused by organisms like

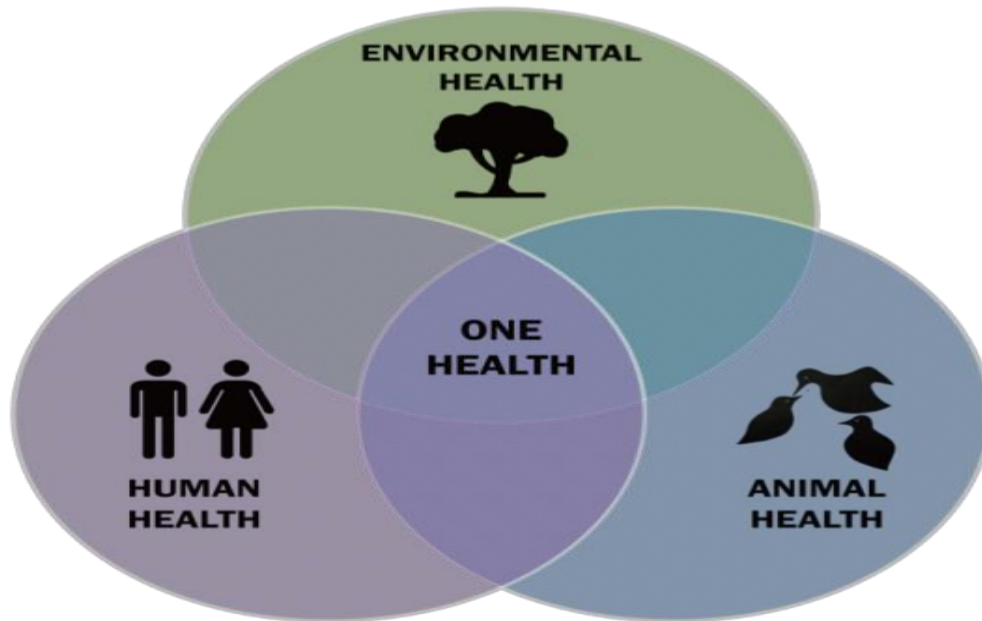


Fig. 5: One health (animal and human health) is interdependent and bound to the health of the ecosystems in which they exist (Rahman 2021).

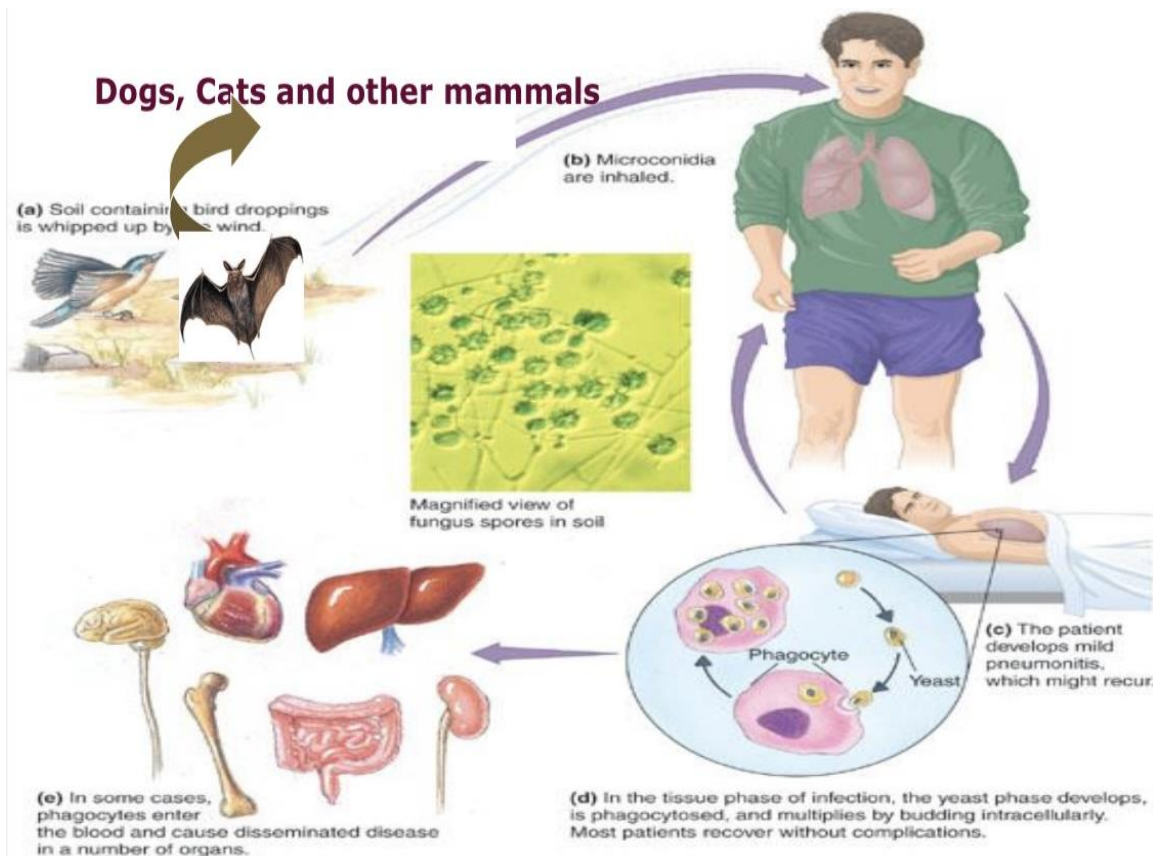


Fig. 5: The pathway of transmission of Histoplasmosis.

Toxoplasma gondii and Trypanosoma species, highlight the importance of avoiding undercooked meat, practicing good hygiene, and controlling vectors. Viral zoonotic diseases, exemplified by rabies and Crimean-Congo hemorrhagic fever, emphasize the need for measures such as vaccination, vector control, and public awareness. Fungal zoonotic diseases, including ringworm and histoplasmosis, underscore the significance of veterinary public health actions, monitoring, and control of infective media.

The complexity of zoonoses necessitates a One Health approach, recognizing the interconnectedness of human, animal, and environmental health. Control strategies involve vigilant surveillance, prompt diagnosis, biosecurity measures, and public education to mitigate the impact of these diseases. In the context of emerging infectious diseases, understanding various zoonotic types, their origins, and drivers becomes crucial for effective prevention and control. As the Center for Disease Control and Prevention works tirelessly, a comprehensive and collaborative approach remains essential in managing and preventing zoonotic diseases globally.

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