Main Causes and Control of Cyclozoonosis in Humans

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ABSTRACT

One of the most severe threats to worldwide public health is Cyclozoonosis, a complicated set of illnesses that are spread from animals to humans. In order to lessen the impact of cyclozoonotic infections on human health, this chapter presents a thorough investigation of the main factors causing these diseases. It also suggests practical control techniques. Exploring the complex relationships between zoonotic organisms and their animal hosts, the chapter explores the various factors that contribute to Cyclozoonosis. In order to provide insight into the various ways that these infections manifest in human populations, it looks at how environmental factors, behavioral patterns, and biological mechanisms contribute to the spread of these diseases. Using a variety of data from case studies and in-depth research, the chapter emphasizes how important different animal reservoirs are to the dynamics of cyclozoonotic pathogen transmission. It emphasizes how critical it is to increase monitoring and learn more about the interactions between these hosts and the viruses they contain. The chapter also examines efficient control techniques, stressing the value of integrated methods. In order to reduce the prevalence of Cyclozoonosis, it promotes preventive measures like vaccination campaigns, better hygiene standards, and focused measures in animal populations. It also emphasizes how important it is to support behavioral changes through education in order to reduce the chance of contracting these illnesses. Policymakers, researchers, and public health professionals will find this chapter to be a useful resource as it synthesizes current knowledge and offers workable recommendations. With a view to protecting human health, it provides a framework for all-encompassing control and prevention methods that will inform and direct future efforts in the fight against cyclozoonotic diseases.

Keywords: Pathogens, Hosts, Echinococcosis, Symptoms, Virus, Respiratory.

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1. INTRODUCTION

1.1. CYCLOZOONOSIS

The term "Cyclozoonosis" describes the spread of infectious diseases that affect humans and animals. These diseases spread through pathogens which include bacteria, viruses, and parasites. Without necessarily including humans in the transmission process, few diseases include a cycle of transfer between different animal hosts. When one animal species acts as a carrier for a certain infection, which can subsequently be transmitted to another animal species, Cyclozoonosis may occur (Chomel 2009). There are some Cyclozoonotic diseases in human as mentioned in Fig. 1.

1.2. MAIN CAUSES AND CONTROL OF CYCLOZOONOTIC DISEASES IN HUMAN

Cyclozoonosis in humans and their control might differ depending on the pathogen involved. These cyclozoonotic diseases caused by different pathogens, which include bacteria, viruses, and parasites that can affect both humans and animals (Blancou et al. 2005). There are the main causes and control measures of different cyclozoonotic diseases.

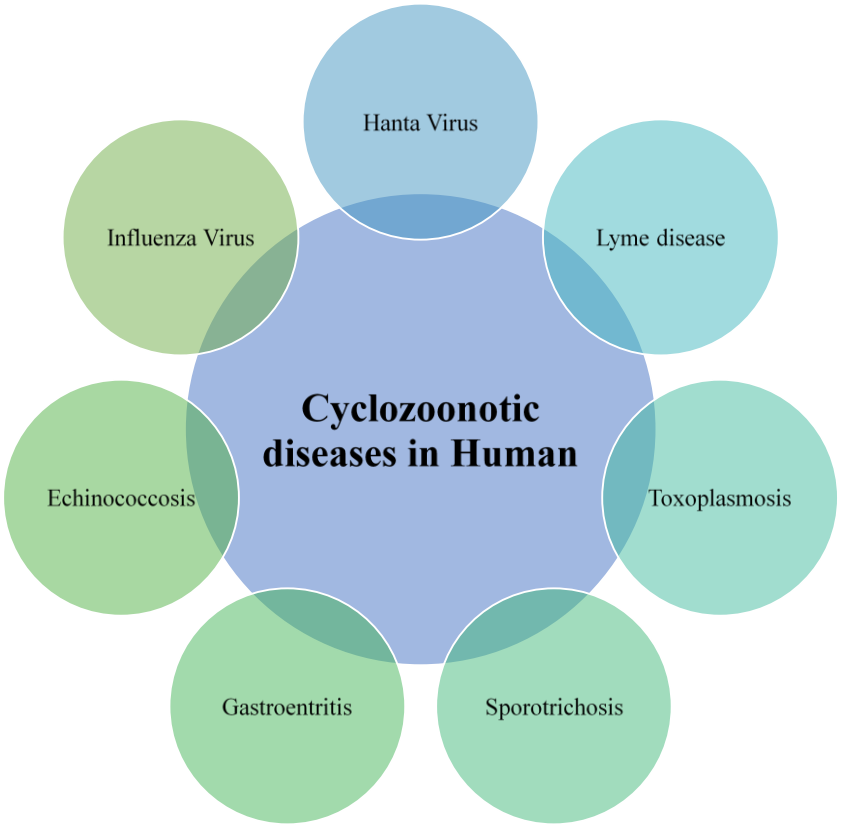

Fig. 1: Cyclozoonotic diseases in Human.

2. ECHINOCOCCOSIS

A significant helminthic zoonotic disease that affects both humans and numerous animal species is echinococcosis (Pal and Purohit 2005; Pal 2007). Adult tapeworms are carried sub clinically by hosts such as hyenas, dogs, wolves and wild predators. Dogs play a significant role in zoonotic transmission because

of their closeness to humans. Worldwide, there could be 2–3 million human cases, according to estimates (Pal and Boru 2012). A cestode is Echinococcus granulosus, also referred to as the dog tapeworm or hydatid worm. It is responsible for cystic echinococcosis, commonly known as hydatid disease. (Khuroo and Mohammad 2002). Water contamination is a rare cause of infection (McManus and Thompson 2003). Fig. 2 shows the main causes of echinococcosis.

2.1. CAUSES

Several species of Echinococcus, small cestode parasites in the Taeniidae family, are responsible for disease. Echinococcus vogeli, Echinococcus granulosus sensu lato, Echinococcus oligarthrus, Echinococcus multilocularis, and probably Echinococcus felidi and Echinococcus shiquicusare among the currently known species (Pal 2007; CFSPH 2011). Alveolar echinococcosis-causing E. multilocularis is less frequently exposed to humans. Poly cystic echinococcosis is caused by the unusual species E. oligarthrus and E. vogeli.

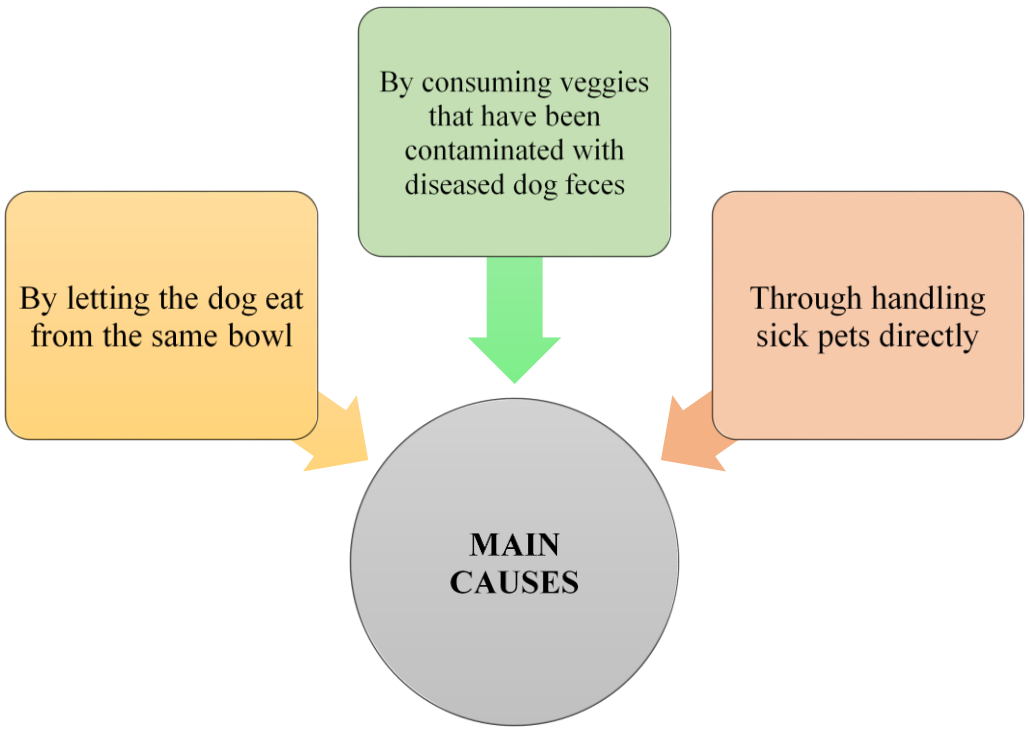

Fig. 2: Main causes of Echinococcosis.

Humans become an incidental host for cystic echinococcosis and usually get affected by handling an infected dog. The most frequently affected organs are the liver and lungs. Younger people appear to have a higher prevalence of pulmonary illness. It is passed on by larvae, the tapeworm Echinococcus' metacestode. The eggs may be consumed in meals like fruits, vegetables, herbs or with contaminated water (Pal 2007).

When a person handles a wild animal, pets an infected dog or cat, or comes in contact with contaminated vegetation and soil, the parasite may also stick to their hands (CFSPH 2011). Infected dogs excrete eggs, and humans become infected by fecal or oral contact, especially during jocular and close contact between dogs and children. Eggs cling to the hairs around a diseased dog's anus, as well as on face and paws.

Infection to humans can also occur by the indirect egg transmission, such as via arthropods, contaminated water and uncooked food (Moro and Schantz, 2009).

2.2. CONTROL

The control of disease can undoubtedly be aided by preventive measures such as

- ✓ Avoiding contact with dog or fox feces
- ✓ Reducing dog or fox populations
- ✓ Hand washing
- ✓ Improved sanitation
- ✓ Incinerating infected organs
- ✓ Treating dogs with praziquantel-impregnated baits, arecoline Hydro bromide and using praziquantel
- ✓ Promoting good health (Pal 2007; Pal and Boru 2012).
- ✓ The carcasses from livestock at the slaughterhouse should not be fed to the dogs. Cats and dogs should not be permitted to kill wild animals or be given any tissues from these species since they are susceptible to parasites from wildlife cycles. Animals that go outside frequently in endemic areas should be tested and/or treated (CFSPH 2011).

Table 1: Control of types of echinococcosis:

Cystic echinococcosis	Alveolar echinococcosis
Cystic echinococcosis can be controlled by reducing the spread of parasites. Two preventive steps include: 1. Limiting the locations where dogs are permitted and 2. Banning animals from consuming meat that has been contaminated with cysts (Budke et al. 2017).	By avoiding contact with wild animals like foxes, wolves, and dogs and their feces as well as by restricting contacts between dogs and rodent populations, alveolar echinococcosis can be avoided (Budke et al. 2017).
➢ Control stray dog numbers and stop dogs from eating contaminated sheep carcasses.	➢ Do not let dogs consume rodents or other animals that roam for food.
➢ Limit the slaughter of sheep and other animals at home.	➢ Avoid interacting with stray dogs, coyotes, and other wild animals.
➢ Don't drink or eat anything that might have been contaminated by dog feces.	➢ Shouldn't pet or bring wild animals into your yard.
➢ Wash your hands with warm water and soap: ✓ After dealing with pets and ✓ Before eating food.	➢ After touching dogs or cats and before eating and cooking food, wash your hands with: ✓ soap and ✓ Warm water.
➢ Teach children the importance of washing their hands to prevent disease.	➢ Teach Kids the necessity of cleaning their hands frequently to avoid the illness.

3. GASTROENTRITIS

Cyclozoonotic diseases can be caused through certain microorganisms. For instance, Salmonella species can be spread directly from animals, especially livestock, to people via infected food. Another illustration is the Campylobacter bacteria, which are frequently, found in poultry and can cause gastroenteritis in people (Cohen 2016).

3.1. CAUSES

The common disease known as gastroenteritis causes the vomiting and diarrhea. Bacterial, viral or tummy bug causes the gastroenteritis disease. Viral gastroenteritis can be caused by many different viruses (Moore et al. 2015).

Norovirus is one of the most typical causes of viral gastroenteritis. The most typical cause of viral gastroenteritis is norovirus. People of all ages contract illnesses from norovirus (the 'winter vomiting bug'). Astrovirus, adenovirus and rotavirus typically harm infants and young children, while they can also infect adults.

Viral gastroenteritis can occur at any time of the year. The most frequent times of year for rotavirus, astravirus and norovirus illnesses are the winter months (Gelaw et al. 2019). Diarrheal illnesses are frequently caused by Salmonella and Campylobacter germs.

Under cooked poultry is the most common way to get both diseases, while unpasteurized milk can also be a source. Dogs or cats with diarrhea can infrequently transmit Campylobacter. Consuming uncooked eggs and coming into contact with reptiles, birds, or amphibians are two ways that salmonella can be spread (Bányai et al. 2018).

Although Foodborne epidemics do happen, Shigella species are another typical bacterial cause of diarrhea. They are typically spread from person to person. Cryptosporidium bacterial toxins are just a few examples of the many things that can cause gastroenteritis. The bacteria do not directly cause disease, but they can contaminate food with their toxic metabolites. Some staphylococcal bacterial strains create toxins that can result in gastroenteritis.

The most frequent cause of bacterial enteritis in humans is Foodborne campylobacteriosis. The two main Campylobacter species that cause intestinal disease are Campylobacter jejuni and Campylobacter coli, but numerous additional species, including rare ones, are also responsible. The growing international movement of goods, cattle, and people has led to the emergence of zoonotic infections in humans, including these unusual Campylobacter species (Desselberger and Gray 2009). Because patients may experience discomfort in the right lower quadrant, Yersinia enterocolitica can produce gastroenteritis or a condition that mimics appendicitis. Under cooked pork, unpasteurized milk, or tainted water are the main carriers of the disease.

Consumption of raw seafood, certain Vibrio species (such as V. parahaemolyticus) might result in diarrhea. In areas where people lack access to clean drinking water and sanitary methods of disposing of human waste, V. cholerae can occasionally produce severe dehydrating diarrhea. This is a particular issue following natural disasters or in refugee camps.

Rarely can Listeria lead to Foodborne gastroenteritis, but it more frequently leads to bloodstream infection or meningitis in elderly persons, pregnant women, and newborn.

Swim in contaminated fresh or brackish water or consume contaminated water to get Aeromonas. Patients who have consumed raw shellfish or visited tropical low-resource areas are at risk of developing diarrhea brought on by Plesiomonas shigelloides (Wilhelmi et al. 2003).

3.2. CONTROL

The simplest daily hand washing with soap and water is still the most efficient way to stop the spread of the cyclozoonotic disease. Since gastroenteritis is highly communicable, the following general precautions can be performed to lower the infection risk:

When you are ill, stay home until 48 hours after your symptoms have subsided. See your doctor if your symptoms don't go away.

There are two live-attenuated oral rotavirus vaccines on the market that are secure and efficient against the vast majority of disease-causing strains. The recommended baby vaccination schedule includes rotavirus vaccine (Glass et al. 2001).

Thoroughly clean hands with water and soap:

After using the restroom or changing a baby, smoking, using a tissue

After handling pet animals, thoroughly wash hands with water and soap.

Disposable paper towels should be used to dry your hands rather than cloth towels because bacteria might remain on surfaces for a while.
Use different tools (tongs, knives, and cutting boards) to handle raw and cooked meals unless they have been well cleaned between uses. Keep all kitchen appliances and surfaces spotless.
Cleanse hands completely with water and soap before preparing food or eating. To stop the growth of bacteria, keep:
cold food below 5 °C and
Hot food above 60 °C.
Make sure food is cooked all the way through. Clean toilet seats, toys, kitchen counters, faucets and baby changing tables thoroughly to avoid transmitting the disease to family members.
People with diarrhea should avoid swimming to prevent recreational waterborne illnesses. Baby and toddler diapers should be checked frequently, and they should be changed in a restroom rather than next to the water. Swimmers should refrain from ingesting water. Only consume bottled water when visiting foreign nations where hygiene is uncertain. Remember to use bottled water to clean your teeth as well. Avoid food buffets, raw or peeled produce, uncooked foods, and drinks with ice.

4. INFLUENZA VIRUS

Influenza virus, which can spread between humans and animals (such as pigs and birds). Human-infected influenza viruses are the source of influenza, also referred to as the flu (Shinya et al. 2006). The three sub types of influenza virus are:

1. Influenza Virus A
2. Influenza Virus B
3. Influenza Virus C

Influenza A and B viruses are the cause of human seasonal flu outbreaks.
The term “bird flu “or "avian influenza" refers to the illness brought on by an infection with type A viruses. These viruses can infect both wild and domesticated mammals and birds. They are a naturally occurring in group of aquatic wild birds all over the world (Hutchinson 2018).

4.1. CAUSES

Avian influenza A (bird flu) viruses can spread from diseased birds to other animals and even Human being in two main ways:

1. Directly from diseased birds or areas where the avian influenza A virus has been introduced through a different animal or a second host (Thomas and Noppenberger 2007).
2. A direct infection can happen if you come into contact with infected birds' saliva, mucous, or feces.

Bird flu infections in humans are rare, but they can happen if enough virus gets inhaled or enters the body by the eyes, nose and mouth (Li et al. 2019). Without appropriate eye and respiratory protection, people may be more likely to receive the bird flu virus if they have close or prolonged contact with sick birds or areas that they have contaminated with their mucus, salivaor faeces. Direct contact with infected live or dead poultry has been the main risk factor for avian influenza infection in humans; however, a few cases have also been linked to the ingestion of raw chicken products, the killing of infected wild swans, or close contact with other human cases.
In China and Laos, the Eurasian H5N6 HPAI virus has been implicated in 84 laboratory-verified instances of human infection. In human H5 instances, respiratory infection has been the most common clinical symptom (Peteranderl et al. 2016). The spread of this virus between humans is relatively rare. People who

come into contact with sick birds are susceptible to the bird flu. A person might, for instance, handle a sick hen, get chicken poop on their hands, and forget to wash their hands before eating. They will consume the diseased bird flesh. This is the most frequent method through which a human receives the avian flu. Although it could persist in uncooked poultry flesh as well, the virus is killed by conventional cooking (Khanna et al. 2008).

Through direct contact with or inhalation of secretions (saliva, mucus, or excrement) from sick birds, humans may get avian influenza viruses. Any avian influenza virus that develops mutations that allow it to bind to receptor sites in the respiratory tract particular to humans is likely to be able to infect people with influenza (Kuiken and Taubenberger 2008).

4.2. CONTROL

Controlling the influenza virus in humans involves a range of measures aimed at preventing its transmission and reducing the impact of influenza outbreaks (Fig. 3).

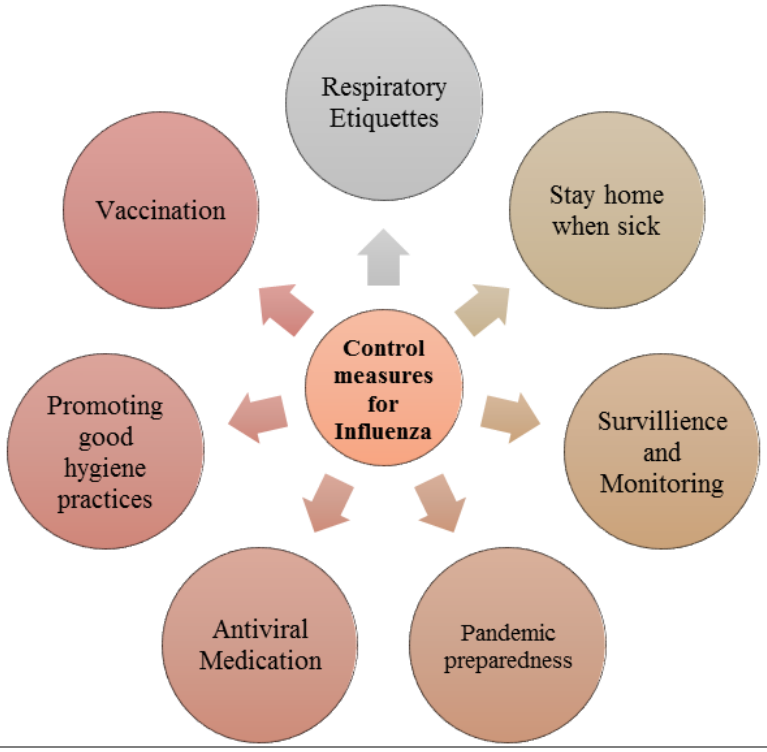

Fig. 3: Key Control Measures for Influenza

In addition to antiviral therapy, personal preventive measures such as: "Regular hand washing with a proper drying of the hands" is part of public health management.

Good respiratory hygiene includes using tissues properly and protecting your mouth and nose when you cough or sneeze.

Isolation of people who are feverish, sick and exhibiting other type of influenza signs as soon as possible.

Keeping distance from unhealthy persons.

Avoid touching your eyes, nose and lips.

When performing aerosol-generating procedures, health care professional workers should adopt airborne precautions. The appropriate personal protective equipment should be made available during epidemics and utilized in conjunction with customary contact and droplet precautions. (Peiris et al. 2007).

When possible, it is advised that citizens and visitors of countries with avian influenza outbreaks avoid going near interacting with animals in live entering locations where poultry may be slaughtered, poultry farms and touching any surfaces that appear to have been contaminated by the excrement of other poultry or animals. It is advised to adhere to good hygiene practices and food safety such as washing your hands with water and soap. Returning visitors from impacted areas should contact their local health services if they experience any respiratory symptoms that could indicate a zoonotic influenza virus infection (Capua and Marangon 2006).

5. LYME DISEASE

Vectors like ticks, and mosquito or fleas can spread several diseases to both humans and animals (Steere et al. 2004). The first case of Lyme disease, also known as borreliosis, was discovered in 1975 when numerous kids with juvenile rheumatoid arthritis were given the diagnosis in Lyme, Connecticut, and two other areas. Deer tick bites were found to be the cause of the spread of arthritis, according to researchers (Kilpatrick et al. 2017).

5.1. CAUSES

The bite of an infected deer tick, commonly referred to as a black-legged tick, is how the bacteria that causes Lyme disease, Borrelia burgdorferi, and is transmitted. Neither common “wood ticks” nor "dog ticks" transmit the disease. These bacteria can be carried by black-legged ticks, sometimes known as deer ticks. Ticks of some species can't transport these germs (Radolf et al. 2021). Juvenile ticks or Deer tick nymphs, are the most common Lyme disease carriers. Their size is comparable to a pinhead. When nymphs eat little animals like mice that have been exposed to B. burgdorferi, they catch the infection. Since the Lyme deer tick is so little, you might not even see it (Coburn et al. 2021). An anesthetic-like chemical found in the tick's saliva numbs the skin so that the bite may not be felt. The Lyme disease-causing ticks are often scarcely bigger than a sesame seed. Nymphs are assumed to infect humans more frequently than adult ticks because they are more difficult to spot borreliosis (Ostfeld and Keesing 2000).

5.2. CONTROL

A minimum tick exposure is the best defense against Lyme disease, Rocky Mountain spotted fever and other tick-borne diseases (Marques 2010). To stop and treat Lyme disease, follow these steps:
Protect your skin and tuck your jeans into your socks before going outside.
Use insect repellent on your skin and clothing; DEET-containing solutions work best.
Keep to well-lit paths whenever you can.
Wear light-colored clothing to make ticks more visible and easier to remove.
During the summer, take extra precautions and wherever you can, stay away from locations with tall grass. If you do stroll or climb in these places, take precautions to avoid getting bitten by ticks.
Wear clothing that is light-colored so that ticks may be seen and removed from you if they settle on you.
Wear long sleeves and long, tucked-in pants with your socks on.
When you get home, take off your clothing and check your entire body, including your scalp. Take a shower as soon as you can to remove any hidden ticks (Ostfeld 2011).

6. HANTA VIRUS

Hantavirus is a rodent-borne virus that can cause severe respiratory disease in humans (Zhang et al. 2010). Hantaviruses have been detected in wild rodents such as mice and rats all over the world.

Hantaviruses can cause Hantavirus Pulmonary Syndrome, a potentially fatal lung condition. (Muranyi et al. 2005). Non-Pulmonary Hantavirus infection is a milder type of the disease that might develop. In 1993, human Hantavirus infections were discovered in the Southwest (Avšič-Županc et al. 2019).

6.1. CAUSES

Hantaviruses are eliminated by rats in their urine, feces, and saliva, and human infection occurs mostly through inhalation of virus-contaminated rodent excreta. As a result, rodent-infested dusty areas pose a concern (Krautkrämer et al. 2013). Hantaviruses are viruses that can cause serious sickness in humans. The deer mouse is the most common viral carrier. The rice rat, cotton rat, and white-footed mouse are also carriers. The rice rat and the vesper mouse are rodent carriers (McCAUGHE and Hart 2000). An individual can get a Hantavirus if they:
When mouse waste is stirred up by vacuuming or sweeping, it is possible to inhale virus particles that have been released into the air as a result of rodent urine, droppings, or saliva (Dearing and Dizney 2010).
Eat food that has been contaminated by the saliva, urine, or droppings of infected rodents.

6.2. CONTROL

Reduce or eliminate rat contact in your place of business, home or campsite. If rats don't think where you are is a decent place for them to be, you're less likely to encounter them.
Mice may fit through gaps that are as narrow as 1/4 inch (6 millimeters). Store your food, especially pet food, in rodent-proof containers and wash your dishes immediately. Also, keep your counters and floors clean. Garbage lid should be secure (Bi et al. 2008).
Keep debris, grass, and brush away from the foundation of a building.
Set spring-loaded traps around the baseboards (Fig. 4). Use caution while utilizing poison-bait traps because the poison can be harmful to both people and animals. avoiding regions where they leave their droppings and avoiding wild mice and rats. When exposed to mouse and rat droppings, using rubber gloves and a mask that covers your mouth and nose is recommended. sanitizing regions with disinfectant after they have been cleaned of mouse or rat droppings (Krüger et al. 2001).

7. SPOROTRICHOSIS

Some fungi can also cause cyclozoonotic infections. For instance, the fungus Sporothrix schenckii, which causes sporotrichosis, can be transferred from animals, particularly cats, to people. A sub-acute/chronic mycosis is sporotrichosis. The fungus sporothrix causes a disorder known as sporotrichosis or "rose gardener's disease". This fungus can be found all around the world in soil and on plants including rose bushes, hay and sphagnum moss (Gremião et al. 2021).

7.1. CAUSES

Exposure to fungus spores in the environment is the process that causes sporotrichosis. Cutaneous infections or Skin infections are the most frequent kind of infection. Usually after contacting contaminated plant material, the fungus enters through a small cut or scratch on the skin. Skin on the hands or arms is most usually affected (Mahajan 2014). The sporotrichosis-causing fungus Sporothrix is found in soil and on plant materials like sphagnum moss, rosebushes, hay, and wood. Skin scrapes or tiny incisions allow the microscopic fungus to penetrate. In rare instances, inhaling the fungus can result in a lung infection. Sporothrix brasiliensis, which causes sporotrichosis, is spread by animal bites or scratches, mainly from cats (Schechtman 2010). Through contacts with cats, people have contracted sporotrichosis. The fungus that

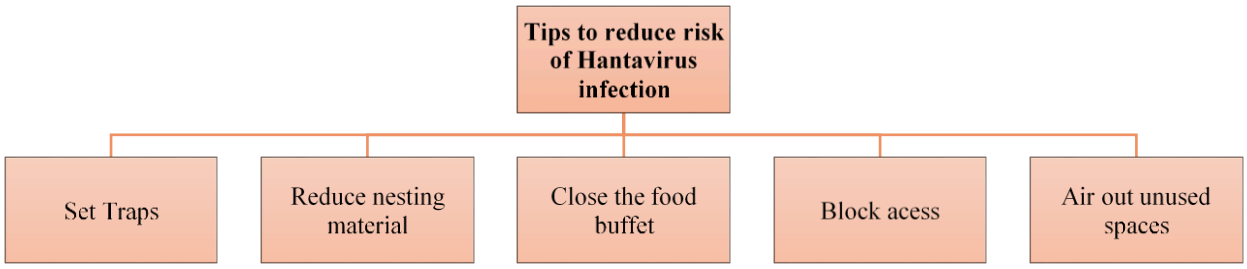

Fig. 4: Tips to reduce risk of Hantavirus infection.

causes sporotrichosis and other diseases can spread through cat bites and scratches. Sporotrichosis often affects the skin, but it can also spread to the lungs, bones, and joints, as well as other body organs (Chakrabarti et al. 2014). The following are some typical causes and risk factors for sporotrichosis in people:
Contact with contaminated material
Animal scratches and bites
Skin Injuries
Occupational exposure
Although the infection can start in skin that seems to be unbroken following contact with hay or moss containing the mold, rose gardners disease atypically starts when the mold spores are driven under skin by a sharp stick or rose thorn (Fichman et al. 2021).

7.2. CONTROL

Preventing mold spores from entering the skin is the most crucial step in preventing sporotrichosis. Anyone who works with roses, sphagnum moss, hay or roses should cover any skin cuts or scratches. To avoid puncture wounds, they should also wear thick gloves and boots. When handling objects like rose plants, pine seedlings, hay bales, or other objects that could break or scratch the skin, these precautions include: donning gloves, boots, and clothing that covers the legs and arms. Avoiding skin contact with sphagnum moss is also a good suggestion (Fig. 5) (Lyon et al. 2003).
Since the fungus often occurs in organic matter, such as soil and plants, it's important to avoid coming into close touch with these sources of infection. When touching soil, plants, or other items that could contain the fungus, wear gloves, long sleeves, and pants.
Keep your skin clean, and steer clear of any activity that could cause skin damage. When working with sharp objects or in areas where the fungus may be present, wear the proper protective equipment, such as gloves and strong footwear.
If you have a cut, scrape, or puncture, make sure to clean it up right away and cover it with a sterile bandage to stop fungus from entering. To reduce the risk of infection, adhere to the wound care instructions provided by medical specialists.
Encourage those at risk, such as farmers, gardeners, and veterinary professionals, to learn about sporotrichosis, its causes, and how to prevent it. Information regarding the illness, its modes of transmission, and the significance of taking personal safety precautions can be included in this.
If you have pets, especially cats, make sure they get the veterinary care they need to stay healthy and to treat any potential sporotrichosis infections. Keep children from having unrestricted access to areas where plant materials could be contaminated. Seek immediate veterinary care if your pet develops any wounds or skin sores. Early detection and treatment with antifungal drugs can aid in limiting the spread of the illness to other body regions.

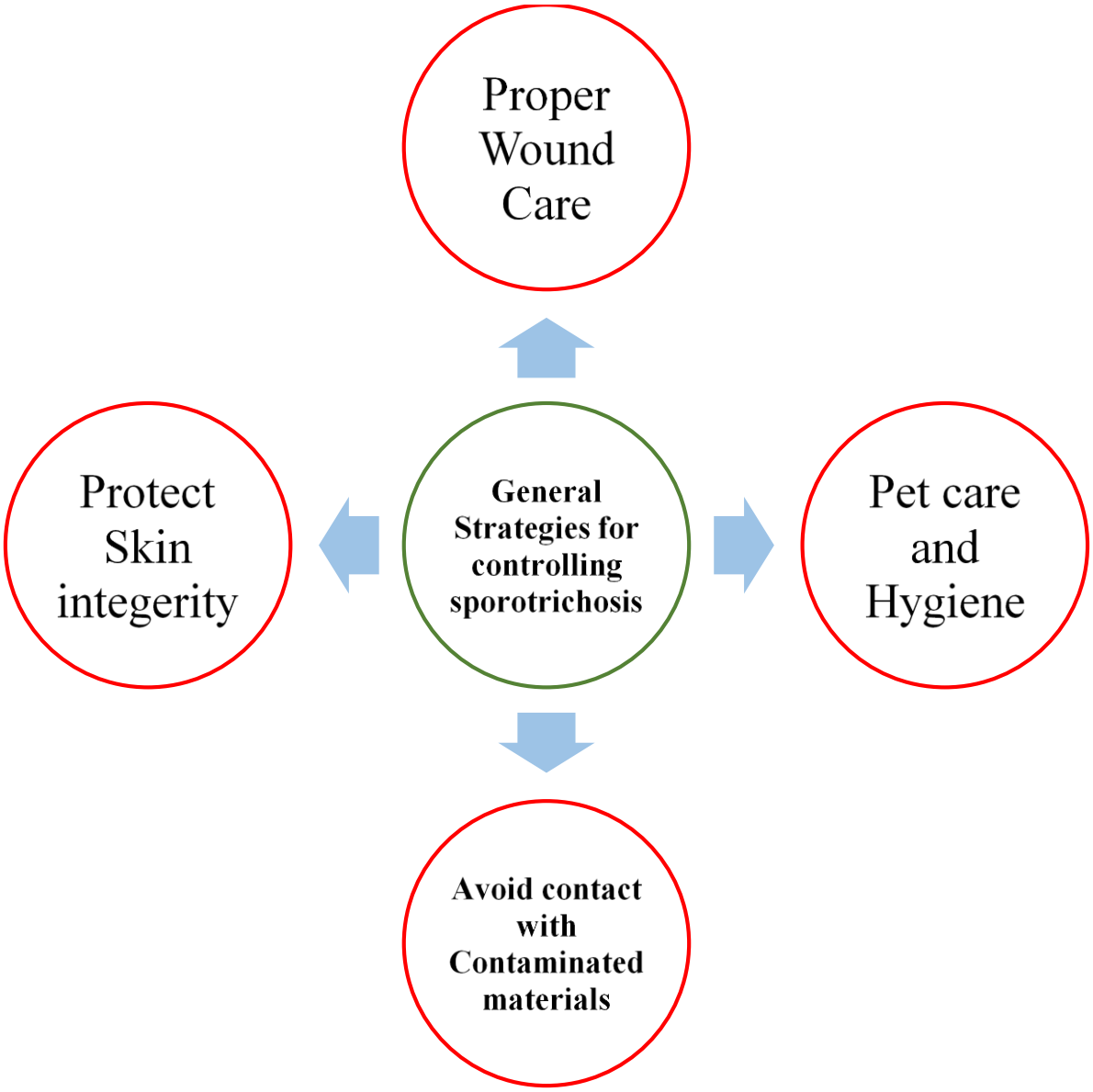

Fig. 5: General Strategies for Controlling Sporotrichosis.

8. TOXOPLASMOSIS

Toxoplasmosis is passed on by the parasite Toxoplasma gondii (T. gondii) (Hill and Dubey 2002). The parasite reproduces in the gastrointestinal tracts of cats. Humans can catch the illness by eating under cooked meat or by coming into touch with cat excrement either directly or indirectly (Dalimi and Abdoli 2012).

8.1. CAUSES

People who unintentionally eat (ingest) something contaminated with the parasite develop toxoplasmosis. Some patients experience flu-like symptoms at the time the parasite first enters the body (Weiss and Dubey 2009).

However, the initial infection is often cured by the immune system without any signs or symptoms appearing. While immune cells are fighting it off, T. gondii creates microscopic sacs (cysts) in your body. Inside these cysts, it can stay dormant (inactive) for a very long time. The entire reproductive cycle can only be completed by domestic and wild cats (Vallochi et al. 2005). These are the main hosts of the parasite.
Immature eggs, a stage of reproduction, may be found in cat feces. This immature egg allows the parasite to climb the food chain. Through soil and water, it can spread to animals, plants, and Human. After acquiring a new host, the parasite's reproduction cycle continues, which results in an infection (Djurković-Djaković et al. 2019).

8.2. CONTROL

Toxoplasmosis can be prevented with the following measures:
Eat no meat that is raw or under cooked. Make sure the meat is cooked through by using a meat thermometer. Whole meats and fish should be cooked to at least 145℉ (63 C) and rested for at least three minutes. Cook ground meat to a minimum internal temperature of (71℃) 160 ℉. Cook poultry, both whole and ground, to at least 165 ℉ (74 ℃) (Smith et al. 2021).
Keep your cat inside to prevent it from contracting the parasite. Feed only canned or dry cat food to your pet. Keep your distance from stray or outdoor cats. While you are expecting, have someone else take care of your cat and clean the litter box. Put on gloves if you have to change the kitty litter by yourself.
After finishing, thoroughly wash your hands in warm water and soap. Every day, clean the litter box. Boil some water on it for five minutes to disinfect it (Kijlstra and Jongert 2008).
Avoid consuming raw goat milk. Steer clear of goat milk and items containing unpasteurized goat milk.
Cover playground sandboxes. Avoid drinking unclean water while pregnant to stop outdoor cats from utilizing them as litter boxes.
Avoid consuming raw shellfish. Avoid consuming raw clams, mussels, or oysters, especially while pregnant.
Wash all of your kitchen equipment thoroughly. Knives, cutting boards, and other implements should all be cleansed in soapy water after coming into contact with, uncooked meat, unwashed produce or uncooked eggs. Whenever you prepare food and thereafter, wash your hands thoroughly (Aguirre et al. 2019).
All produce should be washed. Before eating, peeling, or cooking, wash fresh fruits and vegetables. When handling soil or gardening, put on gloves. When working outdoors, put on gloves. After that, wash your hands with soap and water.

9. CONCLUSION

Animals are the primary source of almost all of infectious cyclozoonotic diseases that harm humans. These infections pose a serious risk to human health in addition to infecting animals with diseases. It frequently happens that alterations in climatic change, dietary patterns and environmentally unfavorable human activities have an impact on the establishment of various cyclozoonotic diseases as a result of increased human–wildlife contact. Because of the significant relation between animals (pet, wild), human, and the environment, research focusing on the one health approach needs to be given priority in order to identify key processes in the transmission of infections due to Cyclozoonosis.

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