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Original Research Paper

Investigating the Epidemiology of Zoonotic Diseases and their Implications for Public Health Systems and Disease Control

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Key Words

Zoonotic diseases, Epidemiology, Spillover dynamics, One health, Disease transmission, Public health systems, Surveillance and control.

Abstract

The intricate human-animal-environment interactions have remained a major menace to the global population in the form of zoonotic disease. The article discusses the epidemiology of major zoonotic viruses in terms of their modes of transmission and route of pathogen, ecological and host-associated mechanisms, and outbreak patterns in various geographical regions. It aims at changing the ecology of the disease by changing land use, urbanization, intensive livestock production, and climate change, and enlarging the spillover possibilities between species. The paper introduces trends in incidence, high-risk interfaces and behavior of the pathogens using an integrative review of recent surveillance data, outbreak reports, and ecological studies. It encompasses a critical assessment of the consequences that it has on the systems of public health, particularly the capacity to observe early as well as the coordination of surveillance among the veterinary and human health systems; and preparedness system gaps. This paper agrees through its emphasis on the fact that the concept of pathogen behavior is closely interconnected with the quality of the habitat, the number of animals, and the animal welfare practice. Identification of these environmental determinants is important to predict the risks of the spillovers and create ecologically viable interventions. The results provided suggest that more efficient One Health approaches should be developed involving animal health treatment, environmental surveillance, and human health disease prevention. Ultimately, the piece of work can provide applicable information to design evidence-based interventions, improve collaboration across sectors, and enhance the resilience in the face of future outbreaks of zoonotic infections in animal and human populations.

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Introduction

Zoonotic diseases are normally passed on between people and vertebrate animals and are caused by a great diversity of agents such as viruses, bacteria, parasites, and fungi. They are established through the ecological and environmental relationships that influence the circulation and adaptation of pathogens to other species (Rahman et al., 2020). These infections can be either related to livestock or wild animals or to peri-domestic animals and, therefore, are directly related to agricultural practices, disruption of habitats, and the modification of human-animal contact (Shaheen, 2022). As the world ecosystems are influenced by urbanization, deforestation, and climate change, there is a great likelihood of the spillage of pathogen into human populations and this has necessitated the need to have a better understanding of the processes involved in zoonotic diseases (Hossain et al., 2025). The implication on the international health discussion is the visibility of zoonoses as the cause of many of the recent outbreaks, as well as the greater awareness that environmental and human health cannot be considered alone (Bueno-Marí et al., 2015).

This goal focuses on the multisomatic relationship between animal populations and their environments. Human factor of zoonotic disease is frequently triggered by a disturbance of the environmental situation, which is one of the main topics of the journal in wildlife ecology, habitat protection, and the variability of all the animals to the change in physiological and behavioral patterns (Plowright et al., 2017). In particular, intense livestock farming, rapid urbanization, and deforestation are anthropogenic strains that imbalance natural reservoirs of pathogens, which is a direct cause of cross-species spillover. Thus, the dependence of the environment change on animal welfare and ecological balance is not only a conservation concern but a vital prerequisite of the human pandemic preparedness (Sokolow et al., 2019). This more ecological-focused perspective, as preferred by the journal, requires the combination of veterinary and environmental data streams as the initial, and most important, barrier to emerging pathogens by monitoring the health of the animal population, and its immediate environment.

Zoonotic disease epidemiology is a critical discipline needed to comprehend the pathogen evolution, persistence, and distribution in an interdependent ecology. This field of study aids in detecting the risk environments where disease transmission occurs, paths of cross-species movements, and environmental conditions that initiate disease outbreaks (He et al., 2022). In a modern situation, it is possible to implement the approaches of epidemiological surveillance into the field surveillance plans, including the use of molecular analysis and spatial modelling, to recognize the early warning indicators and identify environmental factors that impact the behavior of the pathogen (Sharan et al., 2023). The eco-epidemiological information demonstrates that zoonotic diseases are not emerging out of nothing but the land-use change, climatic variability, wildlife trade, and the growing livestock production (Bueno-Marí et al., 2015). The awareness of these determinants would allow predicting the spillover events and creating particular prevention actions within the frames of the One Health approach, the primary concern of which is the combined monitoring of animal, environmental, and human health (Shaheen, 2022).

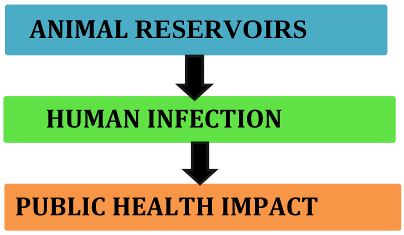

Figure 1: Conceptual Pathway of Zoonotic Spillover

Figure 1 indicates the fundamental procedure involved in the development of zoonotic diseases which can start with animals acting as reservoirs to infectious agent, later to infect human beings through direct contact, vectors, or the environment. After being infected, humans spread the chain of transmission, which leads to more crises in the health of people, i.e. large scale epidemics, an additional burden on our social services, and a call to mobilize efforts in the control of such diseases. The visual flow helps the readers understand how a localized pathogen in an animal can lead to larger problems to be faced by the masses and as such it is important to detect them early and see what can be done to them at the earliest stage possible.

Zoonotic diseases are a significant burden on the healthcare system of a given population, especially in areas where surveillance, diagnostic capacity, and coordination of response efforts are lacking (Chowdhury et al., 2021). Recurring outbreaks, particularly in low- and middle-income countries, cause significant increases in morbidity, mortality, and economic impacts (Coulibaly & Yameogo, 2000). These outbreaks affect populations that rely heavily on livestock for livelihood and nutrition. Laboratory networks play a critical role in the initial diagnosis and verification of an outbreak. Yet, they are vulnerable and have gaps that slow diagnosis and, consequently, the implementation of timely interventions (Coleman, 2000). More complications related to governance and bureaucratic issues in fast reporting and systemic responses to sectors make disease control programs less effective (Allen, 2015). Enhancing the linkage between veterinary and human health systems is a key condition for the successful management of zoonotic diseases, as combined surveillance and communication channels will strengthen preparedness and response efforts (Sharan et al., 2023). The capacity of public health systems to integrate environmental monitoring of emerging animal health information and human disease surveillance into a single, proactive system will determine the system's resilience as global environmental change accelerates (Hossain et al., 2025).

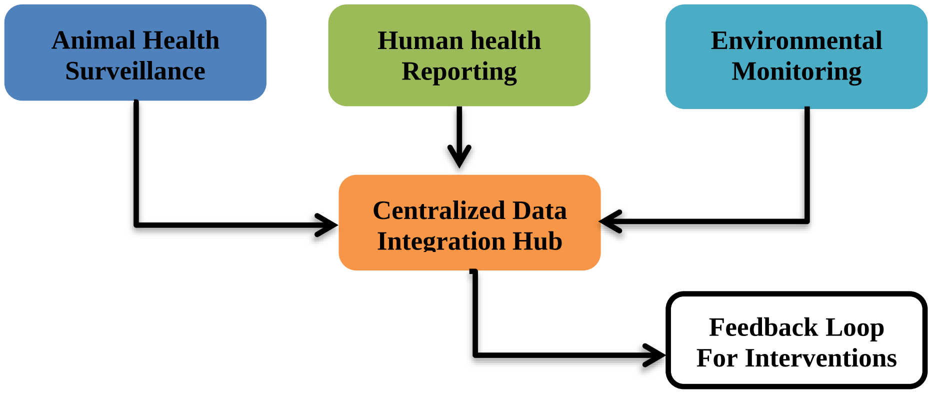

Figure 2: Integrated One Health Surveillance Framework

Through the centralized data integration hub shown in this diagram (Figure 2), which illustrates the comprehensive One Health surveillance system. The hub collects data from all these sources (animal health surveillance, human health reporting streams, and environmental monitoring inputs). It creates a feedback loop that enables prompt interventions across all sectors.

The rest of this paper is organized to provide a detailed flow from the conceptual underpinnings to the analysis. Part II presents the theoretical framework underlying zoonotic disease transmission, including biological, environmental, and systemic determinants of spillover. Section III discusses the epidemiological evidence by analyzing selected case studies, surveillance methods, and trends observed to define our understanding of disease distribution. Section IV addresses the broader implications of the issue for public health systems, including a description of the main challenges, practical control measures, and policy considerations. Lastly, Section V presents the closing considerations, summarizing the key insights and outlining priority areas for future studies.

Theoretical Framework

Depending on the biological properties of a particular pathogen, zoonotic diseases are transmitted through direct contact with infected animals, contaminated environments, vectors, food products, and aerosols. Such pathways are determined by the ecological interactions among wildlife, livestock, and humans, as well as by ecological features that shape the survival and distribution of pathogens (Wilcox & Gubler, 2005). This occurs in most parts of the world due to the proximity of humans to domestic animals, informal livestock markets, and wildlife trade, and, as a result, pathogens can transmit across species boundaries (Samad, 2011). Changes in habitat range and temperature-sensitive vectors, driven by climate, further alter transmission patterns, making their pathogens more mobile and extending their geographic range (Hueffer et al., 2013). Bacterial infections such as brucellosis and zoonotic tuberculosis demonstrate how silent circulation in animals can be transmitted to humans in occupational and domestic environments (Marcotty et al., 2009). They depict zoonotic transmission as not the consequence of a single biological phenomenon but rather as arising from a multidimensional ecological and social system in which animal and human health overlap (Dong & Soong, 2021). Zoonotic diseases occur and spread as a result of interactions among environmental, socio-economic, and ecological factors that enhance the risk of spillover. The high rate of urbanization, deforestation, and land-use change brings wildlife into contact with human communities, exposing them to pathogens in new host networks (Wilcox & Gubler, 2005). Climate change increases the potential for shifts in vector distribution, migration patterns, and extreme weather, thereby increasing the risk of disease transmission (Borham et al., 2025). An increase in international trade and travel also helps pathogens spread rapidly across borders, turning the local outbreak into a national public health issue (Dong & Soong, 2021). Poor veterinary facilities and surveillance systems also enable the presence of zoonotic pathogens in livestock herds without detection and eventually heighten exposure risk to communities (Samad, 2011). Modern studies emphasize that these drivers are not independent of one another; rather, they interact in ways that accelerate the development, emergence, and transmission of pathogens (Ahmed et al., 2025). Therefore, it is necessary to address these aspects in an integrated manner, taking into account the environment, animal health, and human health. One of the key aspects in countering the threat of zoonosis is the role of public health systems in providing early detection, response opportunities, and long-term prevention strategies. Best systems consider veterinary, environmental, and human health data to detect emerging risks and control them before they escalate (Ghai et al., 2022). Intrinsic interruptions in diagnostic capacity, workforce training, and multi-sector collaboration in response to outbreaks are weakened in many low-resource settings (Standley et al., 2019). Enhancing laboratory and reporting systems is thus necessary to identify spillover incidents and transmission routes (Marcotty et al., 2009). The One Health approach is also increasingly viewed as the most effective model for enhancing public health functions, as it emphasizes collaboration among veterinarians, environmental scientists, and medical personnel (Erkyihun & Alemayehu, 2022). Combining policy, surveillance, and community engagement in holistic strategies has shown great potential to reduce the burden of zoonoses and increase preparedness against future outbreaks (Ahmed et al., 2025). With more severe climate and environmental pressure, the resilience of public health systems will rely on how well they can apply coordinated and multi-disciplinary approaches to address the animal-environment-human interface (Borham et al., 2025).

Epidemiological Studies

Case Studies of Outbreaks of Zoonotic Diseases

Investigations of zoonotic outbreaks demonstrate the repeated occurrence of pathogen spillover due to ecological disturbances, animal population mobility, and the lack of early detection. Cases of avian flu in commercial farms usually reflect that the infection spreads among the birds several days before one can notice the symptoms that enable the virus to multiply among heavily housed poultry. Conversely, the outbreak of anthrax in grazing areas is usually preceded by unexpected weather conditions that expose spores, leading to the rapid death of livestock and secondary infections among handlers. An example of a recurring problem is the rabies outbreaks in the peri-urban settlements: poorly vaccinated dog populations serve as reservoirs, and the cases of human infection are often concentrated in the areas with little veterinary services. Throughout these episodes, outbreak cases demonstrate the importance of early reporting, contact network tracking, and identifying environmental factors that trigger or increase transmission.

Animal and Human Surveillance Systems Against Zoonotic Diseases

Surveillance systems are based on stratified methods of integration of clinical surveillance, lab diagnostics, and environmental surveillance. The health screening of the herd, sentinel surveillance using herd-level screening, and periodic serological testing help detect circulating pathogens in animals before massive outbreaks occur. Human surveillance typically includes patient reporting of symptoms, selective testing in high-risk groups, and community-level surveillance by health workers. Environmental intelligence, including wastewater testing, vector trapping, and pathogen identification in soil or water, provides an early warning system to mitigate silent circulating pathogens.

Table 1: Comparison of Common Surveillance Methods For Zoonotic Disease Detection

Surveillance Type	Primary Focus	Key Advantage	Major Limitation
Clinical reporting	Symptomatic animals/humans	Rapid identification of abnormal disease patterns	Misses asymptomatic infections
Serological screening	Past exposure in populations	Useful for mapping immunity and silent spread	Requires laboratory capacity
Environmental monitoring	Pathogens in water, soil, vectors	Detects circulation before clinical cases appear	Interpretation may vary by site
Sentinel surveillance	High-risk species or locations	Early detection in predictable hotspots	Not always representative of wider area

The Table 1 will provide a summary of the key surveillance methods employed to monitor both animal and human zoonotic diseases with their focal areas, strengths and weaknesses. The table illustrates the contributions of each method to early detection and prevention of outbreaks by comparing clinical reporting, serological screening, environmental monitoring and sentinel surveillance. It also reveals that none of these methods can be used independently, but rather a system that incorporates these methods will be a better platform to be used to evaluate risks in time and to control diseases.

Trend and Pattern Analysis of Zoonotic Diseases Spread

The trend analyses indicate that zoonotic diseases tend to have regular cycles of seasons which depend on the climate, animal migration, and human activity. It is the rain and temperature rise that results in an increase in the number of vector-borne infections and food-borne zoonoses that comes at times of intensive livestock transportation. The long term datasets also indicate that geographic range of various pathogens is spreading to new areas because of deforestation and land use changes. Patterns can be used to point to areas of transmission hotspots that have a convergence with wildlife, livestock, and livelihoods of people. Spatial analysis software, including heat maps, cluster detection software, and temporal-trend graphs, assists in identifying areas at risk that persist and when a crisis most likely occurs when the pathogen is released.

Table 2: Key Factors Shaping Observed Trends in Zoonotic Disease Spread

Factor Category	Examples	Influence on Trends
Environmental drivers	Rainfall, temperature, land-use change	Alters vector density, pathogen survival, wildlife movement
Animal-related factors	Livestock trade, wildlife contact, vaccination status	Shapes transmission pathways and reservoir dynamics
Human-related factors	Hygiene practices, mobility patterns, market activity	Determines exposure risk and spread potential
Socio-economic conditions	Access to healthcare, surveillance capacity	Affects detection delays and outbreak magnitude

The Table 2 underlines the key groups of factors that influence the temporal and spatial distribution of zoonotic disease spread, highlighting the interaction of ecological changes, animal processes, human behaviour and socio-economic status to determine the occurrence of diseases. The table helps to draw a more detailed picture of the complexity and interrelation of the mentioned drivers by providing certain examples in each category; here, the necessity to develop a complex of monitoring strategies is highlighted. The introduction aids in understanding the differing patterns of disease in different regions and seasons, as well as why enhancing environmental control, preventive measures in animal health, and health infrastructure in the population is the main focus when minimizing the risk of zoonotic diseases.

Implications for Public Health Systems

Problems in the Management of Zoonotic Diseases

The responses of the public health systems to the threat of zoonotic diseases are characterized by long-standing challenges that are mainly related to the fact that the threats in question do not exist in the form of a single sector. The high movement, interaction of wildlife and humans, as well as ineffective networks of laboratories, usually cause a lag in the time of detection, leading to weeks with pathogens being spread without being detected. The reporting of disease in most areas is still quite scattered and the communication between the veterinary and human health authorities is not well coordinated leading to the development of parallel systems of data that do not interact with one another. Another setback to this is the lack of diagnostic ability in rural regions because initial clinical symptoms may mimic common endemic diseases. Further, there is an unequal awareness of zoonotic risk by the community, resulting in the underreporting of symptoms or the maintenance of high-risk behaviors by the communities. All these issues put pressure on surveillance systems and delay the process of containment.

Prevention and Control of Zoonotic Diseases

Prevention requires a system that is able to foresee risks and not necessarily react to outbreaks. The enhancement of regular vaccination of livestock, organized vector management, and enhancement of biosecurity in farms are the main aspects of long-term control. Simultaneously, the routine threat communication campaigns, Rapid testing guidelines, and orchestrated outbreak drills contribute to the human health services to ensure that action is taken at the right time. Another layer of protection is the environmental management, which is enhancing the waste management, market monitoring, and wildlife encroachment. Combining data of veterinary, environmental and human health care will enable the authorities to notice abnormal trends sooner and take action before the disease becomes contagious.

Table 3: Performance Comparison of Key Prevention Strategies

Prevention Strategy	Strength	Limitation	Overall Effectiveness
Livestock vaccination	Reduces reservoir infection	Requires consistent funding	High
Farm biosecurity	Limits on-farm spread	Adoption varies by farm size	Moderate–High
Vector control	Reduces transmission peaks	Weather-dependent impact	Moderate
Public awareness campaigns	Low-cost, wide reach	Behavior change can be slow	Moderate

The Table 3 offer a comparative perspective of the key prevention measures employed to reduce the spread of zoonotic diseases, their strengths, and operational limitations, and their effectiveness in general. The table also outlines the contribution of each strategy to the prevention of outbreaks to the view of livestock vaccination, farm-level biosecurity, vector management, and public awareness initiatives, comparing the contributions made by them. The summary demonstrates that all methods are value-adding, but their effectiveness relies on the stability of the implementation process, the environment of a particular region, and the collaboration with a community, which proves the necessity of layered and context-specific prevention strategies.

Policy Recommendations for Strengthening Public Health Systems

There should be policies that focus on coordination, infrastructure and long term investment. One of the recommendations is the creation of joint response teams where veterinary, environmental, and medical agencies are combined in the compulsory reporting to a common center. Increasing the laboratory capacity within the facility on the district level would reduce the time of diagnosis and enhance accuracy of early warnings. Reporting gaps can be mitigated by implementing policies that encourage regular data sharing, standard definition of cases, and unified surveillance dashboards. Moreover, emergency funds devoted to the zoonotic events provide emergency swift field teams use instead of bureaucracy.

Table 4: Policy Performance Indicators For Strengthening Public Health Capacity

Policy Area	Indicator	Expected Improvement
Surveillance integration	Data-sharing frequency	Faster cross-sector alerts
Laboratory capacity	Diagnostic turnaround time	Shorter detection-to-response window
Workforce readiness	Trained field staff	More efficient outbreak containment
Emergency preparedness	Availability of rapid funds	Reduced operational delays

In this Table 4, the essential policy areas that will affect the preparedness of the public health systems to deal with zoonotic diseases will be listed under key indicators and their improvements. It shows that the improved integration of surveillance, increased diagnostic capacity, trained field staff, and availability of emergency funds should play a combined role in lessening the detection delays and enhancing response effectiveness. The summary highlights the importance of the policy reforms being backed up by infrastructure and workforce strength, and administrative decisions are transformed into real gains in terms of gaining early warnings and control of outbreaks.

Performance Evaluation

When system performance is assessed in these spheres, one can not but notice that the greatest improvements are achieved when the ability to detect issues early and inter-agency coordination is enhanced. Areas that have optimized communication channels and have ready-to-go response teams usually have less outbreak, less economic damage, and less secondary cases. The policy reinforced with pragmatic field capacity will establish a healthy and strong public health system to deal with routine and emerging zoonotic events.

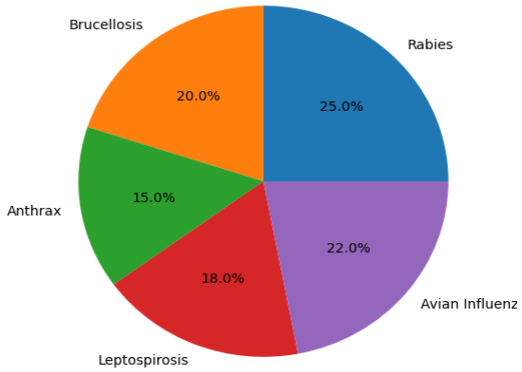

Figure 3: Distribution of Major Reported Zoonotic Diseases

This pie chart (Figure 3) shows the relative contribution of significant zoonotic diseases that were reported in a specific area in a given year of normal surveillance. The visualization assists in demonstrating the dominance of diseases in the caseload, providing a concise description of the priority pathogens that should be monitored and allocated more resources.

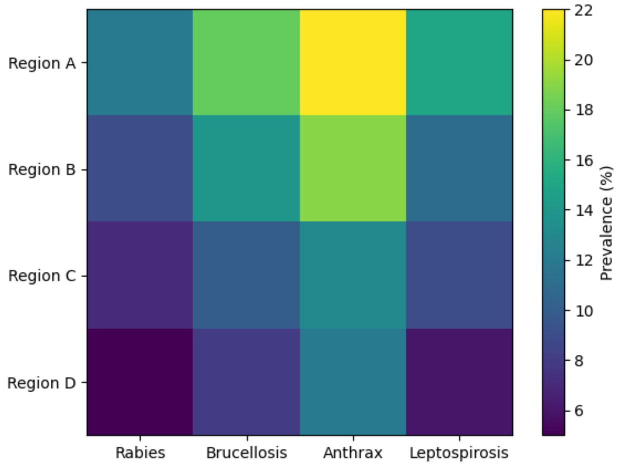

Figure 4: Regional Prevalence of Selected Zoonotic Diseases

In this heatmap (Figure 4), grazing of the prevalence of various zoonotic diseases in four areas is made which immediately helps readers to point at hotspots in geography. Darker colors are more prevalent, which indicates the areas in which the disease control programs might have to be stepped up or where the ecological factors support the transmission of the zoonotic infections.

This box plot (Figure 5) reveals that the incidence of zoonotic diseases is seasonal with more cases being reported during the warm seasons and less activity during the winter seasons. The visual summary assists in identifying patterns in the environment or ecology that is responsible in transmission cycles to promote risk communication and preparedness planning of the seasons.

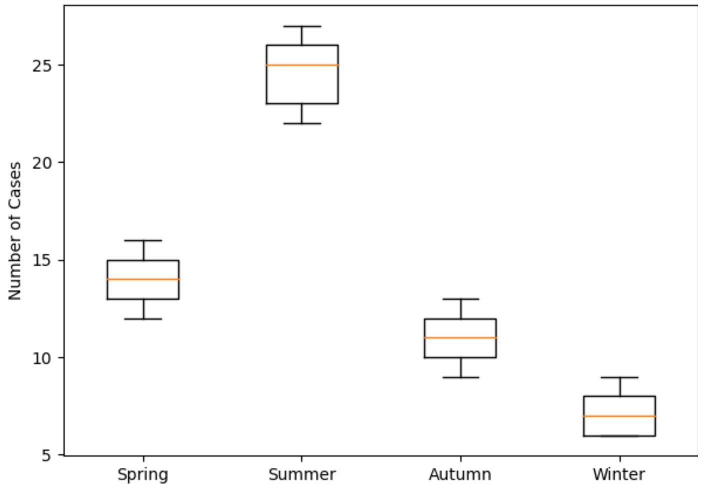

Figure 5: Seasonal Variation in Zoonotic Disease Incidence

Conclusion

The results of this research highlight the extent to which the environmental change, the health of animals, and the vulnerability of humans are intrinsically related to determine the path of zoonotic diseases. Throughout the segments, one gets a sense that spillover occurrences are almost never isolated, but rather, they are a product of the ecological disturbance, animal migration, lapse in surveillance, and inaccessibility of the public to healthcare facilities. Enhancing the quality of early diagnosis systems, enhancing coordination of veterinary and human health authorities, and investing in the quality of local diagnostics is recurrently mentioned as a key topic. Long-term ecological surveillance, cross-regional comparisons of the regions with different land-use patterns, and field-based assessments of the integrated surveillance models would help the future research. This work may assist in improving predictive resources and understanding what interventions would give the highest payback in a high-risk context. Guided by the constant changes of zoonotic threats, there must be a long-term and viable effort on behalf of the public health institutions, policy formulators and research populations. Improving community awareness, safer animal handling and ensuring quick communication in the event of an outbreak are all steps that can be improved. The extended message of action is apparent: only concerted multi-sectoral action that acknowledges zoonotic disease control as a collective responsibility, as opposed to one discipline, will lead to fruitful outcomes. Ultimately, future research efforts, must prioritize long-term ecological surveillance and cross-regional comparisons of different livestock and wildlife environments. This will enhance predictive resources, enabling the creation of sustainable policies that protect both animal welfare and ecosystem health for effective global disease control.

References

[1] Ahmed, Mohamed Mustaf, Olalekan John Okesanya, Zhinya Kawa Othman, Adamu Muhammad Ibrahim, Olaniyi Abideen Adigun, Bonaventure Michael Ukoaka,

Muhiadin Ismail Abdi, and Don Eliseo Lucero-Prisno III. "Holistic Approaches to Zoonoses: Integrating Public Health, Policy, and One Health in a Dynamic Global Context." *Zoonotic Diseases* 5, no. 1 (2025): 5. https://doi.org/10.3390/zoonoticdis5010005

[2] Allen, Heather A. "Governance and One Health: exploring the impact of federalism and bureaucracy on zoonotic disease detection and reporting." *Veterinary sciences* 2, no. 2 (2015): 69-83. https://doi.org/10.3390/vetsci2020069

[3] Borham, Abdallah, Kadria Abdel Motaal, Nour ElSersawy, Yassmin F. Ahmed, Shuaib Mahmoud, Abobaker Salem Musaibah, and Anwar Abdelnaser. "Climate Change and Zoonotic Disease Outbreaks: Emerging Evidence from Epidemiology and Toxicology." *International Journal of Environmental Research and Public Health* 22, no. 6 (2025): 883. https://doi.org/10.3390/ijerph22060883

[4] Bueno-Marí, Rubén, A. Paulo Gouveia Almeida, and Juan Carlos Navarro. "Emerging zoonoses: eco-epidemiology, involved mechanisms, and public health implications." *Frontiers in public health* 3 (2015): 157. https://doi.org/10.3389/fpubh.2015.00157

[5] Chowdhury, Sukanta, Mohammad A. Aleem, Md Shafiqul I. Khan, Mohammad Enayet Hossain, Sumon Ghosh, and Mohammed Z. Rahman. "Major zoonotic diseases of public health importance in Bangladesh." *Veterinary medicine and science* 7, no. 4 (2021): 1199-1210. https://doi.org/10.1002/vms3.465

[6] Coleman, T. J. "The public health laboratory service (PHLS) and its role in the control of zoonotic disease." *Acta tropica* 76, no. 1 (2000): 71-75. https://doi.org/10.1016/S0001-706X(00)00093-0

[7] Coulibaly, Nessan Désiré, and K. Robert Yameogo. "Prevalence and control of zoonotic diseases: collaboration between public health workers and veterinarians in Burkina Faso." *Acta tropica* 76, no. 1 (2000): 53-57. https://doi.org/10.1016/S0001-706X(00)00090-5

[8] Dong, Xiaoping, and Lynn Soong. "Emerging and re-emerging zoonoses are major and global challenges for public health." *Zoonoses* 1, no. 1 (2021): 999. https://doi.org/10.15212/ZOONOSES-2021-0001

[9] Erkyihun, Gashaw Adane, and Meseret Bekele Alemayehu. "One Health approach for the control of zoonotic diseases." *Zoonoses* 2, no. 1 (2022): 963. https://doi.org/10.15212/ZOONOSES-2022-0037

[10] Ghai, Ria R., Ryan M. Wallace, James C. Kile, Trevor R. Shoemaker, Antonio R. Vieira, Maria E. Negron, Sean V. Shadomy et al. "A generalizable one health framework for the control of zoonotic diseases." *Scientific reports* 12, no. 1 (2022): 8588.

https://doi.org/10.1038/s41598-022-12619-1

[11] He, Junyi, Zhaoyu Guo, Pin Yang, Chunli Cao, Jing Xu, Xiaonong Zhou, and Shizhu Li. "Social insights on the implementation of One Health in zoonosis prevention and control: a scoping review." *Infectious Diseases of Poverty* 11, no. 03 (2022): 1-11.

[12] Hossain, Hemayet, Md Shahidur Rahman Chowdhury, Sumaya Shargin Khan, Tanvir Ahmad, Khadiza Akter Brishty, Mostafizor Rahman, Mohammad Nahian Rahman et al. "Emerging Zoonotic Diseases: Epidemiology, Public Health Impact, and the Urgent Need for a Unified" One Health" Approach." *Pakistan Veterinary Journal* 45, no. 1 (2025). http://dx.doi.org/10.29261/pakvetj/2025.115

[13] Hueffer, Karsten, Alan J. Parkinson, Robert Gerlach, and James Berner. "Zoonotic infections in Alaska: disease prevalence, potential impact of climate change and recommended actions for earlier disease detection, research, prevention and control." *International journal of circumpolar health* 72, no. 1 (2013): 19562. https://doi.org/10.3402/ijch.v72i0.19562

[14] Marcotty, Tanguy, F. Matthys, Jacques Godfroid, Leen Rigouts, Gobena Ameni, N. Gey van Pittius, R. Kazwala et al. "Zoonotic tuberculosis and brucellosis in Africa: neglected zoonoses or minor public-health issues? The outcomes of a multi-disciplinary workshop." *Annals of Tropical Medicine & Parasitology* 103, no. 5 (2009): 401-411. https://doi.org/10.1179/136485909X451771

[15] Plowright, Raina K., Colin R. Parrish, Hamish McCallum, Peter J. Hudson, Albert I. Ko, Andrea L. Graham, and James O. Lloyd-Smith. "Pathways to zoonotic spillover." *Nature Reviews Microbiology* 15, no. 8 (2017): 502-510.

[16] Rahman, Md Tanvir, Md Abdus Sobur, Md Saiful Islam, Samina Ievy, Md Jannat Hossain, Mohamed E. El Zowalaty, AMM Taufiquer Rahman, and Hossam M. Ashour. "Zoonotic diseases: etiology, impact, and control." *Microorganisms* 8, no. 9 (2020): 1405. https://doi.org/10.3390/microorganisms8091405

[17] Samad, M. A. "Public health threat caused by zoonotic diseases in Bangladesh." *Bangladesh Journal of Veterinary Medicine* 9, no. 2 (2011): 95-120. https://doi.org/10.3329/bjvm.v9i2.13451

[18] Shaheen, Mohamed NF. "The concept of one health applied to the problem of zoonotic diseases." *Reviews in medical virology* 32, no. 4 (2022): e2326. https://doi.org/10.1002/rmv.2326

[19] Sharan, Manjeet, Deepthi Vijay, Jay Prakash Yadav, Jasbir Singh Bedi, and Pankaj Dhaka. "Surveillance and response strategies for zoonotic diseases: a comprehensive review." *Science in One Health* 2 (2023): 100050. https://doi.org/10.1016/j.soh.2023.100050

[20] Sokolow, Susanne H., Nicole Nova, Kim M. Pepin, Alison J. Peel, Juliet RC Pulliam, Kezia Manlove, Paul C. Cross et al. "Ecological interventions to prevent and manage zoonotic pathogen spillover." *Philosophical Transactions of the Royal Society B* 374, no. 1782 (2019): 20180342. https://doi.org/10.1098/rstb.2018.0342

[21] Standley, C. J., Carlin, E. P., Sorrell, E. M., Barry, A. M., Bile, E., Diakite, A. S., ... & Katz, R. (2019). Assessing health systems in Guinea for prevention and control of priority zoonotic diseases: a One Health approach. *One Health*, *7*, 100093. https://doi.org/10.1016/j.onehlt.2019.100093

[22] Wilcox, Bruce A., and Duane J. Gubler. "Disease ecology and the global emergence of zoonotic pathogens." *Environmental health and preventive medicine* 10, no. 5 (2005): 263-272. https://doi.org/10.1265/ehpm.10.263