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Preventive strategies for Zoonoses diseases: Rising concerned among the population

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Abstract

Zoonoses are any disease or infection that is naturally transmissible from vertebrate animals to humans. More than 200 types of zoonoses are recognized till date. Zoonoses comprise a large percentage of new and existing diseases in humans. Certain zoonoses, like rabies, can be completely avoided with vaccination and other preventative measures. A few diseases, like HIV, start off as zoonoses before evolving into strains that are exclusive to humans. Disease outbreaks that repeat frequently include salmonellosis and the Ebola virus. Others have the potential to start worldwide pandemics, as the new corona virus that causes COVID -19. It is estimated that over 60% of the western families own a pet as a result reverse zoonoses and zoonoses has become a major problem. Each pathogen has different preventive measures for zoonotic diseases. In this present review work, we have highlighted some of the preventive strategies of these infectious diseases. In the agricultural sector, safe and adequate rules for animal care contribute to a lower risk of food borne zoonotic disease outbreaks through the consumption of meat, eggs, dairy products, and even some plants. Surface water protections in the natural environment, trash removal guidelines, and standards for clean drinking water are very crucial. Campaigns to educate people about the importance of washing your hands after coming into touch with animals and other behavioral changes can help stop the spread of zoonotic diseases in the community. Limiting Transmission Risks, Boosting the Body's Defences, Understanding Vaccination, promoting veterinary public health at collective scale, Anticipating risks through monitoring and assessment are some of the preventive measures for Zoonoses.

Keywords

Zoonoses Diseases; public health; infection risk; preventive strategies

Introduction

Emerging Infectious Diseases (EIDs) pose a serious threat to public health and global economics (1). Zoonoses (singular: zoonosis) are infectious diseases that can be transmitted from animals to humans. They can be caused by a variety of pathogens, including bacteria, viruses, parasites and fungi. Zoonoses account for 60.3% of EID incidents; most of these (71.8%) have their origins in wildlife (e.g., Ebola virus, severe acute respiratory virus) and their pevalence is rising steadily over time (2). The list of zoonotic illnesses is extensive and constantly growing. Serious acute respiratory syndrome (SARS), the H5N1 variant of highly pathogenic avian influenza (HPAI), swine flu(H1N1), Middle East Respiratory Syndrome (MERS), Zika, Ebola, Nipah and COVID-19 are a few examples of Zoonotic outbreak in the Twenty-first century (3). Zoonotic disease transmission-Three components are necessary for the spread of infection: a source of pathogens, a vulnerable host and a means of transmission for the microorganism (4).

Prevention Strategies: Control and prevention of emerging parasitic zoonoses are complex tasks that require an integrative and multidisciplinary approach. Reduction of parasite burden is certainly a major objective but cannot be implemented alone. Therefore, environmental and ecological modifications need to be implemented to reduce not only the parasitic load, but also the risk of parasite transmission. Finally, education and behavioral changes are essential for the success of both control and prevention (5). For emerging infections, strengthening of public health surveillance worldwide to provide early warning has been the primary recommendation of expert groups for the past two decades (6). The development of vaccines for the control of potential zoonotic infections in wildlife (i.e. rabies vaccines for foxes and raccoons) as well as the prevention of spread and disease in humans is ongoing. In some cases, there are good candidate vaccines (7) but the risk of human disease may be perceived to be too low to be economical (8), or there may be insufficient supplies for the entire population (9).

Veterinarians, animal scientist and wildlife ecologists have a critical role in the early detection, management of re-emerging viral zoonotics, in addition to clinicians and public health specialists (11). For the sake of future prevention and control, it is imperative to identify ecological perturbations as soon as possible, starting with the dieoff of domestic animals or wildlife (Fig.1), especially those that interact with wildlife (e.g., the Nipha virus) (12). Early detection and management of newly emerging and reemerging viral zoonotics will be made easier by our knowledge of and surveillance of the continuum of health between humans and animals (13). “Primary prevention’’ and “secondary prevention’’ are terms occasionally used to describe preventive and control. The goal of primary prevention is to keep the population healthy, or to stop diseases from developing. The goal of secondary prevention is to reduce harm after an illness has struck. The last phase of a disease control program is eradication. It is the process of removing a pathogen from a certain population or geographic region (14). Pre-emergence, emergence, localised transmission, epidemic and pandemic are the five stages of the emergence of infectious diseases according to the WHO (15).We understand spillover to be a crucial sixth stage in the genesis of disease (Figure 2). Viruses from wild animals can infect humans, occasionally through domesticated animals (16). Increased human animal interaction, livestock rising, deforestation and the hunting and trading of animals are some of the several factors that contribute to spillover (17).

What steps can we take to reduce the likelihood of new outbreaks and speed up the process of identifying novel infections before they spread both locally and worldwide? Increase viral detection and monitoring first. Second, keep an eye out for viral infection in large-scale, high-density animal husbandry, wildlife hunting and wildlife trafficking. Lastly, we can stop land-use changes related to agricultural expansion, such as deforestation. Global promotion of One Health (OH) has been extensive. In order to prevent and control zoonosis, it appears acceptable to embrace the One Health (OH) concept, which highlighted the relationships between humans, animals and their environments (19). The interdependence of all life systems on Earth and the relationship between human, animal and environmental health are acknowledged by OH (20), which makes OH an integrated approach to human and animal health that takes into account their unique social and environmental contexts crucial (21).

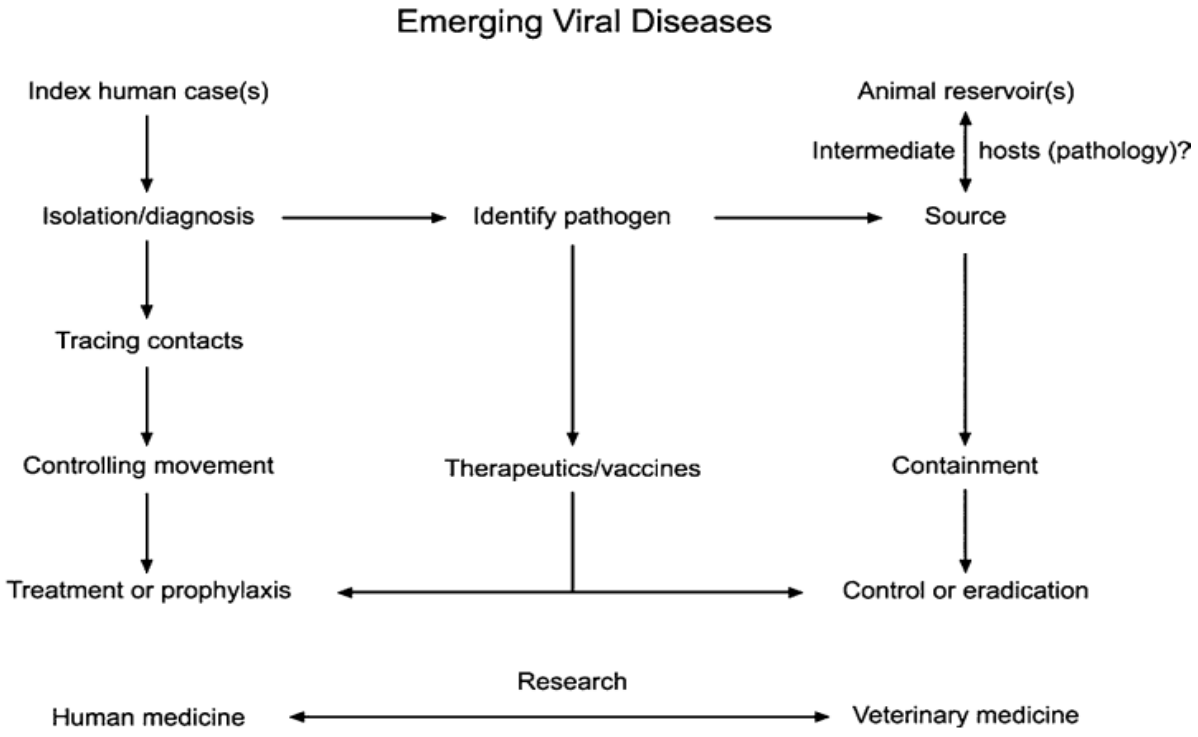

Figure-1: The public heath continuum and the diagnosis, management, and control of developing zoonotic illnesses (10).

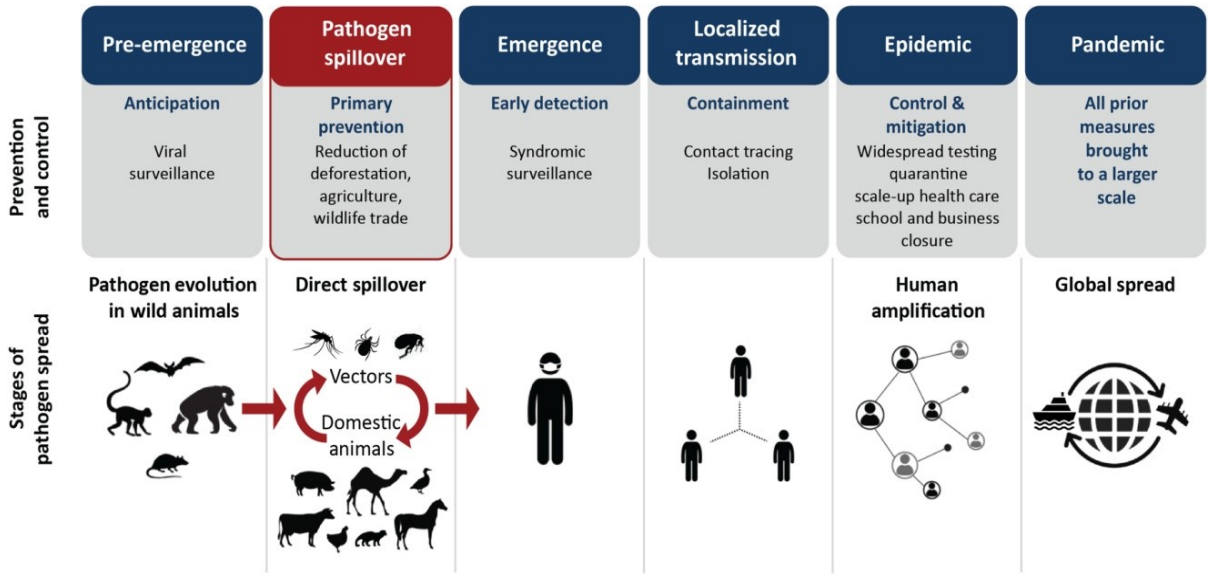

Figure 2: Stages of emergence of pathogens: local to global (18).

Conclusion

In addition to the various health professionals, legislators, and economist must pledge globally to prevent and control new parasitic zoonoses by allocating sufficient funds for interactive control initiatives.

However, the primary challenge still depends on the local people and calls for behavioral changes on the part of humans in order to modify the environment in our growing urban civilization and more accurately identify the threats related to wildlife. Improving hygiene standards, immunization, vector control, isolation and quarantine are a few crucial steps. One health strategy, legislation and policy, safe water and sanitation, surveillance and monitoring, education and awareness are all very important.

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Authors' contributions

S.B, responsible for selection of the review topic. B.S involved in the major data collection from the online scientific repositories. S.B, responsible for the guidance of the survey work till the end. S.B & B.S, contributed for drafting, designing, formatting and referencing of this draft article and communicating with scientific esteemed journal having good reputation in the scientific fields. All authors have read and approved the manuscript.

Compliance with ethical standards

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