

ONE HEALTH: ISSUES

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“75% of emerging infectious diseases come from animals & 60% of human pathogens are zoonotic.”

INTRODUCTION

In the early 21st century, emerging zoonotic viruses that had the potential to cause pandemic disease, and extensive human mortality, created several international crises. Governments and scientists worldwide recognized that greater interdisciplinary collaboration was required to prevent and control zoonosis, and that such collaboration should include not only physicians and veterinarians, but also wildlife specialists, environmentalists, anthropologists, economist and sociologists, among others. The expression ‘One Health’ was proposed as a concept to foster such interdisciplinary collaboration. Here are some of the global One Health issues.

EMERGING AND RE-EMERGING ZONOSES

Over the last 15 years, our planet has faced more than 15 deadly zoonotic or vector-borne global outbreaks. Hanta, Ebola, highly pathogenic avian influenza [H5N1 and recently H7N9], West Nile, Rift Valley fever, norovirus, severe acute respiratory syndrome [SARS], Marburg, influenza A[H1N1] and bacterial (e.g., Escherichia coli O157:H7, Yersinia pestis, and Bacillus anthracis, the causes of hemolytic uremic syndrome, plague, and anthrax, respectively). Since 1980, more than 87 new zoonotic and/or vector-borne emerging infectious diseases have been discovered.[\[2\]](#)

TRANSBOUNDARY DISEASES ON ONEHEALTH

No country whether rich or poor is immune from the risk of these disease, especially South Asian countries. The globalization of food (and feed) trade, facilitated by the liberalization of world trade, while offering many benefits and opportunities, also represents new risks. The FAO philosophy—shared by the OIE—embraces the need to prevent and control TADs and emerging diseases at their source, which is most of the time in developing countries.[\[3\]](#)

BIOTERRORISM

Toxins are poisons produced by living organisms. Toxins relevant to bioterrorism include ricin, botulinum, *Clostridium perfringens* epsilon toxin, shigatoxins, mycotoxins, nicotine. [4] Botulinum toxin is the most lethal substance known [5]. A single gram of crystalline toxin, evenly dispersed and inhaled, would kill more than 1 million people. [6] The dispersal of aerosolized agents in a concentrated population area is the most dangerous scenario and perhaps the most likely method to be used by terrorists.

USE OF ANTIMICROBIAL MEDICINE AND DRUG RESISTANCE

Usage of antimicrobials in animals, can result in selection of resistant bacterial populations. Resistance also develops in non-pathogenic bacteria, these may become donors of resistance genes to pathogens and pose an indirect risk to human health. To reduce the problem of human infections caused by resistant bacteria of animal origin, there is continuous pressure to restrict the use of antimicrobials in animals. [7] The best example of a food-borne pathogen rapidly becoming resistant to an antimicrobial used in both veterinary and human medicine is *Campylobacter*. The introduction of Enrofloxacin in the poultry industry and ciprofloxacin for human use (both fluoroquinolones) went hand in hand with an increase in fluoroquinolone resistant *Campylobacter* in human cases, as first reported in the Netherlands. [8]

ECOLOGICAL DISRUPTION

Ecological disruption is another major issue to address and may be one of the most dangerous factors in the emergence of new zoonotic diseases. As humans encroach on new habitat, it is a certainty that they will be exposed to novel pathogens that could move from their four-footed or avian niches into humans to engender disease. In addition, there is the anthropogenic movement of pathogens into new geographical locations, a phenomenon that has been termed ‘pathogen pollution’. [9]

WILDLIFE ZOONOSIS

Wildlife acts as a potential but unknown reservoir for diseases that emerge or re-emerge possessing zoonotic threat and include vector-borne viral diseases (75%) viz., Hendra and Nipah viruses, Men angle, West Nile virus, Monkey pox. Although rarely observed (approximately 1 per year globally) zoonotic viruses that originate in wildlife and are associated with food systems punch above their weight in terms of their potential human, animal, and economic impacts.

CONCLUSION AND FUTURE PERSPECTIVES

It can be summarized that scientific and policy-focused presentations from leaders, public health and scientific communities covering topics on current global activities focusing on surveillance for emerging infectious diseases in the ecosystem are important. Moreover, round table discussions to effectively generate multi-sectorial, trans-boundary surveillance initiatives need to be regularly organized, bringing together participants from diverse scientific backgrounds. An overall emphasis should be on epidemiology, surveillance and networking, and prevention and control policies of zoonosis focusing the current and future perspectives. Equitable coordination between the public and private sectors is advisable.

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