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GUEST EDITORIAL

PROMOTING "ONE HEALTH" AS A PARADIGM SHIFT IN HUMAN AND ANIMAL HEALTHCARE DELIVERY FOR SUSTAINABLE DEVELOPMENT

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INTRODUCTION

Over the last few centuries health services to man and animals have been delivered separately as human health services and veterinary services, respectively. The emergence of new diseases and re-emergence of certain diseases especially those which can affect both man and animals (zoonotic diseases) in recent times is raising questions on providing separate services that in some instances are neither integrated nor coordinated or at best poorly coordinated. It has been reported that since 1980, on average a new disease emerges every 7 months, with 60% of these being transmissible between animals and man (zoonoses). Six billion people around the world may be at risk of contracting seven climate-related diseases- malaria, dengue and other haemorrhagic fevers, schistosomiasis, human trypanosomosis, Chaga's disease, leishmaniasis and river blindness by 2050 [1]. Of these 7 diseases, 4 are zoonoses. Other reports estimate that 64% of 1400 known human infections [2] and 73% of emerging infectious diseases are zoonoses [3]. These include highly pathogenic avian influenzas H5N1 and H7N9 (the latter first reported in humans in 2013!), Severe Acute Respiratory Syndrome (SARS), West Nile virus, Rift Valley Fever, Ebola, pandemic Influenza H1N1 2009 and recent outbreaks of novel COVID 19 in 2019 and 2020 suspected to be from snake or bat sources.

From 2001 to 2011 in the WHO African Region 24% (206/857) of acute public health events were zoonoses and included diseases such as Ebola, Marburg, Lassa fever, Rift Valley fever, yellow fever, avian influenza (H5N1), Lujo arena virus, monkey pox, anthrax, rabies, brucellosis and plague [4]. The origin of a number of these emerging or re-emerging diseases may be attributed to increased contact between humans, wildlife and domestic animals as a result of people and livestock increasingly accessing areas inhabited by wild animals and transforming environment in ways that disrupt natural ecosystems [5]. The increase in health threats at the human-animal-ecosystem interface in recent times is imposing a heavy burden on human and animal health services and is driven by factors which are global and interrelated so that reducing these risks cannot be done by individual sectors alone [6]. The "One Health" approach is described as "the proper response to the current situation of emerging diseases." [5].

"One Health" (OH) has been defined as "the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals, plants and our environment" (One Health Commission, Undated). The concept of "One Health" aims at focusing attention on the similarity between human health and veterinary interests. People, animals and the environment are interacting more and more in various ways creating a situation in which the health of each group is inextricably interconnected and totally dependent on others (One Health Commission, Undated). Further, new opportunities arise to protect and promote health in the rapidly changing human, animal and environment domains. However, these opportunities and the capacities and abilities to improve health cannot be based on strategies and mind-sets of the past but rather, on a new integrated approach that reflects the interdependence and realization that man is part of a larger interconnected ecological system. This calls for a paradigm shift in healthcare delivery.

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RATIONALE FOR ONE HEALTH

The rationale for OH is best articulated in the Manhattan Principles on "One World, One Health" by the Wildlife Conservation Society [7] as follows:

> "*It is clear that no one discipline or sector of society has enough knowledge and resources to prevent the emergence or resurgence of diseases in today's globalized world. No one nation can reverse the patterns of habitat loss and extinction that can and do undermine the health of people and animals. Only by breaking down the barriers among agencies, individuals, specialties and sectors can we unleash the innovation and expertise needed to meet the many serious challenges to the health of people, domestic animals, and wildlife and to the integrity of ecosystems. Solving today's threats and tomorrow's problems cannot be accomplished with yesterday's approaches. We are in an era of "One World, One Health" and we must devise adaptive, forward-looking and multidisciplinary solutions to the challenges that undoubtedly lie ahead."*

The principles affirm the interconnectedness of the health of people, domestic animals and wildlife, and the resilience of ecosystems, and propose forward-looking, adaptive approaches to managing these interactions [7]. With man, animals and environment intricately linked to form a complex domain where the health of each group is interconnected with each other and therefore inseparable, physicians, veterinarians and public health specialists cannot work indifferently and independent of each other but must take cognizance of the connectedness of their professions [8]. It has been argued that emerging infectious diseases embody a complex interaction of human, domestic, and wild animal populations together with ecosystem factors, demanding a multidisciplinary or OH approach that brings together veterinarians, physicians, wildlife biologists, ecologists, environmental scientists and many others for an effective understanding and prevention of disease evolution [5].

The risk factors for public, animal and environmental health are diverse and existing policies may not address the common threats to human, animal and environmental health holistically, advocating the use of "One Health" approach in the African Region [9]. It is reported that for surveillance of zoonotic pathogens and effective control of diseases, an integration of human and animal populations is required; however, such integration is lacking in contemporary veterinary and medical services so that a new approach is necessary. In the light of emergence and re-emergence of diseases, detection at an early stage is important [10]. This is because often disease threats are recognized after being detected in humans, although clinical signs might have first occurred in animals and identifying health problems in animals that could be associated with human diseases is important and necessary [11]. Further, OH provides simultaneous animal and human study procedures and inter-sectoral institutional reforms, and therefore, could reduce the time to detect emerging zoonoses and increase response for control and prevention [11].

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BENEFITS OF ONE HEALTH

According to the AVMA [12], the OH approach has a number of benefits. These include an improvement in animal and human health delivery globally through collaboration between all health disciplines especially between veterinary and human medical professions to address critical needs. Another benefit is the use of a multidisciplinary approach in meeting new global challenges through collaboration between various professions – veterinary medicine, human medicine, environmental, wildlife and public health. Other additional benefits are an increase in professional opportunities for veterinarians and enhancement of scientific knowledge to create innovative programmes to improve health. A "One Health" perspective enhances zoonoses detection and control by inter-sectoral surveillance and communication, and by providing novel cost-effective trans-sectoral options for zoonoses control in low-income countries. The approach supports scaling up of health development and improves equity effectiveness by covering populations who are left almost without any health services [13].

BARRIERS/CHALLENGES TO ONE HEALTH

According to Sherman [5], among the many barriers to implementation of OH are the need for key leaders to accept the concept of OH approach; buy-in from human medical, veterinary medical, industrial and environmental partners; difficulty in changing the mindset of healthcare providers from a "disease-care" mode to that of preventive medicine; and the increased specialization and fragmentation of the veterinary field and the difficulty in getting busy practitioners to be part of the programme. Other challenges identified as likely to impede the implementation of One Health include limited collaboration and coordination mechanisms between human, veterinary and environmental health services; inadequate multi-sectoral engagement at local, district, national and regional levels; limited sharing of data and information between sectors; inadequate and inequitable distribution of resources; inadequate laboratory capacity for human, veterinary and environmental health; and inadequate knowledge on emerging health threats [9]. These are clear and present barriers to effective implementation of the One Health approach needing to be addressed if it is to succeed.

AREAS OF COLLABORATION

The areas for collaboration under OH are many as identified by AVMA [12]: clinical medicine, biomedical research; animal agriculture and animal sciences; antimicrobial resistance; agro- and bioterrorism; basic research; comparative medicine; conservation medicine; entomology; ethics; human-animal bond; food safety and security and consumer support. Others are diagnosis, surveillance, control, response and recovery aimed at natural or intentional threats of chemical, toxicological or radiological origin; combating existing and emerging diseases and zoonoses; infectious diseases ecology and developing and implementing integrated systems for detection; and commonality of diseases among people and animals such as cancer, obesity and diabetes. Further areas are disaster preparedness and response; environmental agent detection and response; global food and water systems; global trade and commerce; health communications; environmental health and preservation; implications of climate change; land use and

production systems and practice; mental health; occupational health. Additional areas are microbiology education; public awareness and public communications; enforcement of regulations; scientific discovery and knowledge creation; wild life promotion and protection; biodiversity support; training and establishment and maintenance of vibrant veterinary and environmental health professionals and organizations. All these provide opportunities for collaboration between human, animal and environmental health personnel to make the world a better place.

CONCLUSION

It is said that the OH approach enables a strategic recognition of connection between human, animal and environmental health and a more efficient alignment of limited financial and material resources [14]. Furthermore, it provides the opportunity to establish structures that allow early detection of emerging threats to human, animal, and environmental health together with mobilizing interventions to mitigate their potential emergence and spread. One Health may be critical in solving problems that traditional disciplinary or sectorial approaches are unable to handle [15].This editorial makes a case for promotion and adoption of the One Health approach in the delivery of human health and veterinary services in resource-challenged environments, especially in Africa.

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