

Role of a veterinarian in present society and one health approach

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Journal of Livestock Science (ISSN online 2277-6214) 5: 18-22

Date of receipt: 28.02.2014; Date of acceptance: 10.03.2014

Abstract

Veterinary science is a multi-disciplinary subject which includes research on diagnosis, control, prevention and treatment of animal diseases as well as on the basic zoology, welfare, and care of animals. All activities of animal science essentially affect human health either directly through biomedical research and public health or indirectly by addressing domestic animal, wildlife, or environmental health. Veterinary research at a fundamental level is a human health activity. Veterinary scientists protect the human health and well-being by ensuring food security and safety, preventing and controlling emerging infectious zoonoses, protecting environment and ecosystem, assisting in bioterrorism and agro-terrorism preparedness, advancing treatment and control of non-zoonotic diseases, contributing to public health, and engaging in medical research. The introduction of the concept of 'One Health' which takes a holistic approach to address human, animal, and ecosystem health, again emphasizes the role of a veterinarian as a leader in present society by addressing the risk and emergence of zoonotic diseases and promoting basic health care needs of the world.

Key Words: Veterinary profession, public health, one health, one medicine, zoonoses.

Introduction

“Being admitted to the profession of veterinary medicine, I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health and welfare, the prevention and relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge”. Every graduate entering into veterinary profession swears an oath not only to protect animal health but also welfare, to not only relieve animal suffering but to prevent it, this is what defines the goals, responsibilities of a veterinarian (RCVS, 2006; AVMA, 2010). Will Rogers once said, “The best doctor in the world is a veterinarian. He can’t ask his patients what is the matter—he’s got to just know.” Veterinarians rely on their training to ascertain ailments and diseases. The ability to identify ailments in a variety of species demands intensive multi-disciplinary training, including anatomy, physiology, microbiology, parasitology, pathology, biochemistry, diagnostic imaging, medicine and surgery. In most circumstances, this training enables veterinarians to see cases through from start to finish, which is often not the case for human health professionals. Even their work environment is too vast, ranging from long hours spent in research labs and pet clinics, on farms and in the wild dealing with often confused and scared animals.

Veterinarian and animal health

In animal clinics, veterinarians work with companion, farm and exotic animals to diagnose and treat acute and chronic diseases, provide targeted vaccines, treat parasitic infection and infestation and perform minor surgeries like dressing wounds, mending broken bones, performing dental work to major ones like caesarean sections and also humanely euthanize whenever necessary. Veterinarians are also key contributors to ethical review processes in Vetero-legal cases, speaking with authority and pragmatism as the animals’ advocate. That is what these animals deserve, not only the five freedoms- freedom from hunger, freedom from discomfort i.e. having shelter, freedom from pain and suffering from disease, freedom to express its normal behavior, freedom from fear and distress; but proper internationally achievable and respected standards for their whole life.

Veterinarian and public health

More than half of all human diseases are animal originated, caused by multi-host pathogens. Effective prevention and control of infectious diseases at the animal-human-ecosystems interface is the key to prevent the spread of diseases in animals and humans, enhancing food security and fostering poverty reduction. Increased transparency in the animal health situation contributes to better public health. All activities of animal science affect human health either directly through biomedical research and public health or indirectly by addressing domestic animal, wildlife, or environmental health. The Veterinary research transcends species boundaries and includes the study of spontaneously occurring and experimentally induced models of both human and animal disease and research at human-animal interfaces, such as food safety, wildlife and ecosystem health, zoonotic diseases and public policy (Mazet *et al.*, 2009). By its nature, veterinary science is comparative and gives rise to the basic science disciplines of comparative anatomy, comparative physiology, comparative pathology, and so forth; but its ability to reach its peak potential relies on adequate infrastructural, financial, and human resources. These veterinarians partner with zoologists and conservationists, and are often at the fore of emergency relief to treat animals affected by forest fires, oil spills, and other natural disasters, which not only affect wildlife, but also farm and companion animals. Trained veterinary professionals, such as those in Public Service and Food Inspection, work to promote food security and ensure that food from animals is safe to ship and eat (Institute of Medicine, 2012). Through stringent inspections and controls prior and after slaughtering, meat safety is continuously checked. At all phases of the production and distribution of food from animal origin they are involved in preserving its hygiene and safety. The veterinarian is committed professionally and morally with the community, whether rural or urban. Since a born volunteer, he forwards his knowledge to the community as a whole to improve his environmental education and health, to improve the quality of our life. Globally, veterinary service literally means the difference between life and death not only for animals but also for humans as majority of world’s

poor population depends on animals for food, income, social status or cultural identification, companionship, security, where there is nothing more important than taking care of the animals that allow adults to work, families to earn and children to eat. This situation became evident when *Hurricane Katrina* devastated New Orleans, those rescuers were surprised when people from flooded houses refused to leave without their pets. Here the veterinarians intervened in this third world life style and in getting their household improved through innovation in their livestock rearing by providing them technical, financial and moral support.

One world, one health, one medicine

The term One Medicine was coined by Calvin Schwabe (1927-2006) which is a shorter form of “One Health” and longer representation of “One World, One Health, and One Medicine” (Gibbs and Anderson, 2009). ‘One World - One Health’ is an exciting movement to encourage wildlife, domestic animal and human health professionals to work collectively to address the world’s most challenging health concerns. ‘One Medicine’ approach to human and animal health emphasizes the interconnectedness of relationships and the transferability of knowledge in solving health problems in all species (Barrett *et al.*, 2011). The major difference between One Medicine and One Health is the addition of ecosystem health into the interface. Ecosystem health is included to incorporate the environment, as well as wildlife populations, and recognizes that sustainable development and continued human and animal health are dependent on healthy surrounding ecosystems (Forget and Lebel, 2001; Lebel, 2003; Zinsstag *et al.*, 2011).

One Health was advanced during the 2004 Wildlife Conservation Society conference to address the health of human, domestic, and wildlife populations (CDCP, 2011). This conference led to the creation of Manhattan Principles and the development of One World, One Health™ (OWOH™), a trademark protected term of the World Wildlife Society (CDCP, 2011). To build upon the established OWOH™ principles, a series of conferences were held in Beijing (2006) and New Delhi (2007) on the agenda of curbing avian and human pandemic influenza (CDCP, 2011). In October 2008, the World Health Organization (WHO), the Food and Agriculture Organization from the United Nations (FAO), and the World Organization for Animal Health (OIE) drafted the influential document Contributing to One World, One Health: A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface (FAO, WHO, OEI, UN System Influenza Coordination, UNICEF, 2008; Papadopoulou and Wilmer, 2011).

Rapid growth and technological innovation have led to profound improvement in the management of livestock sector, including: a progressive leap from small-holder farming systems towards large-scale specialised industrial production systems; a shift in the geographic locus of demand and supply in the developing world; and an increasing emphasis on global marketing. These changes have put forth the implications for the ability of the livestock sector to expand the production in sustainable ways that promote food security, and public health as well as reduce poverty. The speed of change has often significantly outpaced the capacity of governments and societies to provide the necessary policy and regulations, to ensure an appropriate balance between the provision of private and public goods. The result has been systemic failures apparent in social exclusion, widespread environmental damage and threats to human health. The exponential increase in the fauna population has led to serious implications for the availability, use and management of land and water, forests, and wildlife resources. The change in climate and ecosystems, and the greater human contact with wild animals have resulted in an increased exposure to new disease-carrying vectors and pathogens. The higher density of domestic animals and humans has created a conducive environment for existing and emerging pathogens, and the projected increase in movement of people and animals have increased opportunities for the exchange of pathogens worldwide (FAO, 2010).

The ***One Health*** approach aims to enhance global efforts to mitigate and counter the emergence of zoonoses and other diseases. The approach calls for strong multisectoral and multidisciplinary collaboration, which moves beyond the strengthening of veterinary-public health systems to more clearly encompass disease prevention, with greater emphasis on safer food production, distribution and marketing practices, and adoption of sustainable animal agriculture and natural resource management (Papadopoulou and Wilmer, 2011). It includes research on prevention, control, diagnosis, and treatment of diseases of animals on the basic biology, welfare, and care of animals. It is broad in scope and truly multidisciplinary and focuses on agro- and bio-terrorism, agriculture and animal sciences, antimicrobial resistance, basic and translational research, biomedical research, clinical medicine, combating existing and emerging diseases and zoonoses, comparative

medicine, consumer support, diagnosis, surveillance, control, response and recovery directed at natural or intentional threats that are chemical, toxicological, or radiological in nature, entomology, ethics, food safety and security, global food and water systems, global trade and commerce, health communications, health of the environment and environmental preservation, implications of climate change, infectious disease ecology, integrated systems for diseases diagnosis, land use and production systems and practice, mental health, microbiology education, occupational health, public awareness and public communications, public health and public policy, regulatory enforcement, scientific discovery and knowledge creation, support of biodiversity, training, veterinary and environment health organizations and wildlife protection (AVMA, 2008). One Health is very much an overarching concept that spans many disciplines, professions, and areas of interest that includes the protection of animal health, the relief of animal suffering, the conservation of livestock resources, the promotion of public health, and the advancement of medical knowledge. Close cooperation and interaction between veterinarians, occupational health physicians and public health operators is thus necessary, for a worldwide strategy to expand interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment. This is what the One Health Approach is intended to be (Rabozzi *et al.*, 2012).

Veterinary medicine is approximately one-tenth the size of the human medical profession and its ability to be optimally and simultaneously successful in areas such as biomedical research, agro-terrorism, food safety and security, and public health is challenging at best. Even though, incorporating One Health into their existing specialties is considered daunting, local human and veterinary medical associations can meet more frequently to discuss topics of mutual interest in their communities, under the common banner of one health and can catalyze the concept to trickle down to clinicians at the local levels. Veterinarians are well grounded in population health, comparative medicine, and preventive medicine. The appointment of Lonnie J. King as the director of the centre has again emphasized that veterinarians are qualified enough to lead the 'one world-one health' movement (NCZVED, 2009; Gibbs and Anderson, 2009). The Veterinarian's Oath, to which all veterinarians have pledged our professional lives, can be considered a leaders position for One Health, failure to which will not uphold the principles of the veterinarian oath.

The concept of one health has become a rallying call in response to the failing health care needs of our world and lack of collaborative effort of our veterinary and human professionals who in turn are focussed over individualised health care and explore deeper into biomedical research have made the situation even worse.

Role of a veterinarian in Indian society

India's livestock sector is one of the largest in the world. It has 56.7% of world's buffaloes, 12.5% cattle, 20.4% small ruminants, 2.4% camel, 1.4% equine, 1.5% pigs and 3.1% poultry (AHD, 2011). In 2010-11 livestock generated outputs worth Rs 2075 billion (at 2004-05 prices) which comprised 4% of the GDP and 26% of the agricultural GDP. Nonetheless, the share of livestock in the agricultural GDP improved consistently from 15% in 1981-82 to 26% in 2010-11 (AHD, 2011). Animal husbandry is an integral component of Indian agriculture supporting livelihood of more than two-thirds of the rural population. Livestock sector is expected to emerge as an engine of agricultural growth in the 12th plan and beyond in view of rapid growth in demand for animal food products. Considering the existing orientation of livestock production systems and specialized requirements of livestock owners, it's the time to reminisce the role of veterinarians in addressing the constraints and provide extension services towards spreading the awareness about animal health and welfare. This would call for building up an exclusive cadre of livestock extension workers, establishment of Krishi Vigyan Kendra (KVK) exclusively for livestock activities and strengthening Agriculture Technology Management Agency (ATMA) with Animal Husbandry experts. India has about 55000 veterinary institutions including poly clinics, hospitals, dispensaries and livestockman centers. All veterinarians and veterinary para-professionals are licensed to practice by an autonomous Veterinary Council of India and are subjected to legal disciplinary provisions for any professional misconduct (OIE, 2007). Veterinarians performing official government functions use their best efforts to ensure that any colleagues in clinical practice, either government or private, are kept informed on matters affecting their clients and their animals like an outbreak of notifiable disease. Veterinarian expertised in curing the sick or injured animal will always be in demand as their knowledge in the welfare of animals is unique and they are never reticent in

coming forward. Society expects veterinarians to be involved wherever animals are at risk or are about to be placed at risk. They are always pro-active, ask never complacent and willing to be involved. With an increasing global population, they will continue to play an ever more important role in ensuring a healthy world, for animals and humans.

Conclusion

The veterinary profession has the independence, integrity, knowledge and skills to provide the consumer with reassurance that their expectation of high food safety, human and animal welfare as well as environmental standards has all been met – all the way from farm to fork.

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