



A Monthly e Magazine
ISSN:2583-2212
February, 2023; 3(02), 152-157

Popular Article

Role of Veterinarians in One Health

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<https://doi.org/10.5281/zenodo.7669026>

Abstract

One health is an approach of combining human, animal and environmental components to address global health challenges and maintain ecological sustainability. Zoonoses are diseases that are naturally transmitted between the vertebrate animals and humans. Zoonoses have affected human health time's immortal, wildlife and domestic animals have always played a role for transmission of disease which is of public health threat worldwide. Veterinarians have major role in enhancing public health, by control and prevention of zoonotic diseases, ensuring supply of safe food particularly of animal origin and water quality, promoting wildlife and ecosystem health. So, success in preventing and controlling of major public health issues depend on the capability to mobilize resources from allied sectors with effective coordination by intersectoral approaches, especially, between national veterinary and public health services.

Keywords: Veterinarian, zoonoses, one health, ecology and animal welfare.

Introduction

Veterinarian, a person dedicated for the benefit of society, conservation of animal resources, relieve the suffering of animals and promote animal wellbeing. **Calvin Schwabe, Veterinary epidemiologist coined the term "One Medicine"**.

One Medicine or One Health (OH) is a collaborative, multi-sectoral, coordinated, and trans-disciplinary approach with the goal of achieving optimal health outcomes by recognizing the

interconnection between people, animals, plants, and their shared environment. It involves the communication and coordination of activities among the professionals in **human health** (doctors, nurses, public health practitioners and epidemiologists), **animal health** (veterinarians, veterinary technicians, veterinary nurses, and agricultural workers), **environment** (ecologists, wildlife experts), policy makers and pet owners.

With increasing population, industrialization, and geopolitical problems, damage to biodiversity, ecosystems, climate changes are accelerating, which led to the emergence of various health issues

Veterinarians in Human Health

1. Reduce global hunger

Animal products (Milk, Meat, and Egg) are the source of most nutritious food for the population in malnutrition. By improving livestock and cropping pattern, farmer's household income and livelihoods are being increasing.

2. Control Zoonoses

When zoonotic diseases strike any given geographical location, veterinary professionals are first approached for taking immediate action at the field level to control the transmission and give technical advices on veterinary issues to governments, media and the public. Veterinarians collaborate with human medical counterparts on zoonotic diseases and advise local health boards and commissions. Communities are best served when veterinarians approach public health issues with a "herd health" perspective.

3. Monitor food quality and food safety

Veterinarians are key component for supporting sustainable production of foods of animal origins and to the success of farm operations (**Processed, frozen, packaged, and meat, milk and ice cream**). Veterinarian's responsibility in conducting ante-mortem and post-mortem inspections and making food safety interventions like detection of adulterations in milk and meat ensures a safe and wholesome food supply to consumers (Sigfirdo Burgos Caceres *et al.*, 2012).

4. Biomedical Research

Veterinarians are involved in managing and maintaining laboratory animal colonies for research and diagnostic efforts. They also involved in development of novel drugs, vaccines and biologics with an aim of protecting animal and human health. **Camille Guerin**, a



veterinarian who, together with Albert Calmette developed the first Vaccine for immunization against tuberculosis in humans (Donald L Naah *et al.*, 2015)

5. Disease surveillance

Disasters do not usually cause new diseases but can lead to increased transmission and outbreaks. During disasters, Veterinarians visit to disaster affected areas to make active surveillance about any disease occurrence in livestock and aquatic animals and thereby it's importance in human health. Veterinarians are also involved in collection of samples, testing and confirmation of samples and taking necessary steps for preventing spread of infection (K Stohr *et al.*, 1997)

6. Biosecurity

The veterinarian is a sentinel for the early detection of, and early response to, accidental or deliberate introduction of exotic diseases. The primary biosecurity measure involved is **Quarantining** of newly entering animals and birds. **Isolation** of those diseased or suspected animals in that area is an important biosecurity measure in control and spreading diseases. **Sanitation** improves and protects health and well-being of the people via maintain clean farm environment (like foot bath, fumigation of eggs) and proper disposal of animal wastes. (Sigfirdo Burgos Caceres *et al.*, 2012).

Veterinarians in Domestic Animal Health

Veterinarian has the following responsibilities

- a. Conducting post-mortem examination of the vetero-legal cases
- b. Investigations in case of malicious and accidental poisoning
- c. Issuing health certificates
- d. To prevent cruelty to animals

1. Promote animal welfare

Animal welfare is the well-being of animals. An animal in a good state of welfare is defined when it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and not suffering from unpleasant states such as pain, fear and distress. Good animal welfare includes disease prevention and treatment of affected animals, providing appropriate shelter, management, nutrition, humane handling and humane slaughter/killing (Jim Berry *et al.*, 2014).



2. Increase domestic animal production for food

The demand for foods of animal origin seems likely to increase, the efficiency of food production, the resilience of the food chain, and the role of the veterinary profession appear increasingly important. Healthy and productive livestock produce a wide variety of food products for direct and indirect human consumption and processing.

Veterinarians are involved in discovery of improved technology which will increase the profit of farmers. Veterinarians are involved in formulating improved feed rations and also in creating genetically superior breeds to increase food production. (Jim Berry *et al.*, 2014)

3. Prevent disease outbreaks

- a. Vaccination: In disease outbreak conditions animals become more susceptible to diseases due to stress. So Veterinarian actively involved in vaccinating animals to prevent diseases.
- b. Deworming: Based on parasitic infestation regular deworming is done.
- c. Disinfection of animal sheds by insecticidal spray: disinfection of animal sheds to be done with the compounds like lime powder, alum, formalin, Bleaching powder, Copper sulphate, phenol gases like HCN, formaldehyde etc. For control of ticks, flies, mosquitoes, lice etc. various insecticides like Deltamethrin, melathion, aldrin, etc. may be used.

4. Increase and support animal products exports

Livestock industry is highly developed, very competitive, and heavily export oriented. Integrated livestock companies, involving feed production, contracting out growers, processing and marketing are common in the poultry and pig sectors. All these enterprises have a specific interest in increasing the animal productivity and provide veterinary services, drugs, vaccines and extension advice to out- growers or to cooperative members, accounting for its cost under the product's (inputs and output) supply/procurement contractual arrangements (Dr.Rajesh Kumar Singh, 2019).

Thus, Veterinarians are helpful in for those companies to increase animal products production and exports by creating awareness to farmers regarding measures to stimulate the privatization process.



5. Provide clinical and population health expertise for all animals

Veterinarians are sufficiently influential and act as expertise in social animal welfare and educate the wide public on basic animal husbandry. Veterinarians educate pet owners about the risks of acquiring infectious diseases and enhancement of knowledge reduce disease transmission risks by vaccinating pets and by reducing pet's burden of parasites that may infest the animal's owners.

6. Combating antimicrobial resistance

Many antimicrobials are used for the treatment of specific diseases and for disease prevention. As a profession we must also be confident that appropriate medications are available with veterinary oversight to allow adequate treatment of our patients. By the way of veterinarians are highly helpful in preventing antimicrobial resistance in humans too by limiting the use of anti-microbials in animals (Jim Berry *et al.*, 2014).

Veterinarians in Ecological Health

1. Protect biodiversity

Veterinarians involved in promoting captive breeding and research on the "forgotten" and "ignored" species of invertebrates, fish, amphibians, reptiles and birds. The Convention on Biological Diversity protects the key drivers of extinction. Zoos and aquariums are the places where the threatened and endangered species are protected. (Veterinarian in Wildlife and Ecosystem Health, Workforce needed in Veterinary Medicine, 2013).

2. Management of wildlife resources

Veterinarian should get information about specific wild animal species in the area should be gathered by interaction with personnel of different cadre in forest department. Additionally, the wild animal species which is focused in that area should be known, e.g., Tiger is the much-focused wild animal in tiger reserve area.

3. Disease surveillance and prevention in wild animal populations

Random assessment of health in selected wild animal's species shall be carried out by veterinarians whenever opportunities arise or when it demands in a periodical way. During transportation or shifting of wild animals from one region to another, health assessment measures should be undertaken. Whenever any lesion is found, sincere efforts should be undertaken to send samples in nearby institutions. Proper sampling and getting the



confirmatory reports are the prime responsibilities of veterinarian and once the disease found out the precautionary measures shall be undertaken.

4. Conservation of natural resources, conservative medicine

Wildlife veterinarians play a vital role in conserving natural resources via *in-situ* and *ex-situ* conservation, apart from saving number of species and understanding the consequences of animal diseases to human communities, they also encompass to protection of functional and integrated ecosystem, applying their skills and scientific knowledge on emerging field of conservation Medicine.

Conclusion

By One Health approach Veterinarians can:

- Prevent outbreaks of zoonotic disease in animals and people
- Improve food safety and security
- Reduce antibiotic-resistant infections and improve human and animal health
- Protect global health security

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