



Review on Relationship among Animal health, Human health and Environment (one health)

Abebe Mequanent

University of Gondar College of Veterinary Medicine and Animal Science, Department of Veterinary Clinical Medicine, Gondar, Ethiopia, P.O. Box: 196.

[E-mail: abebemequanent@gmail.com](mailto:abebemequanent@gmail.com)

Abstract: Health is the state complete physical, mental and social wellbeing not merely the absence of disease. And any deviation from health is called disease. One health is the interaction between animal health and human health and with their environment. Zoonotic diseases are a disease that transmitted from animal to human and vice versa: example, anthrax, brucellosis, rabies, tuberculosis and so on. Up to today there was ignorance of one health and zoonotic disease, because of many constraints like less awareness about the significance of zoonotic disease, no organized surveillance system and report on the one health and zoonotic disease. Following prevention measurements and precaution is a key role to protect the people from zoonotic diseases.

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1. Introduction

Now a day the center for disease control and prevention agree focusing on strict follow up between animal health and human health because for the time being the diseases that are transmitted from both pet animal and other animal to human is highly increased due to different factors such as high temperature, poor management of animals, lack of awareness about zoonotic diseases, poor vaccination experience and less attention is given to one health by government system and non-governmental organization (NGO). The environment is contaminated by different wastage products; this is indirectly influence on both animal health and human health (Abshire *et al.*, 2005).

2. One Health

A concept that takes into account the relationship among human health and animal health and the environment. People, animals, and environment are closely connected to each other. Movement of diseases from animals to humans can be influenced by changes in the environment they share. An approach to looking at new diseases and other adverse health events by taking a holistic viewpoint that considers human health, animal disease, and environmental changes (Ashford *et al.*, 2004).

No strict definition, some people might think that: One Health is a return to simpler times when most physicians were generalists rather than specialists, and physicians and veterinarians communicated regularly. One Health is especially

important now because we live in a time when there is an increase in the number of new human diseases that originated in animals (Bricker *et al.*, 2003)

3. Zoonoses

Zoonoses refer to diseases that pass between people and animals or are the diseases that can be transmitted to people by contact with cats, dogs and other animals. Recently, researchers have determined that >70% of emerging infectious diseases in people actually come from animals (De massis *et al.*, 2005). Some of these diseases start in wildlife that is being displaced by deforestation in remote areas of the world. Diseases can move around the globe quickly because people and products, such as animals and food supplies, are constantly crossing borders. Examples of new emerging infectious diseases: viral hemorrhagic fevers like Ebola, respiratory diseases like SARS, novel influenza viruses, like pandemic H1N1. What these serious diseases have in common is that they all start as zoonoses in the animal kingdom.

Zoonoses that pass directly from dogs and cats to people: Diseases that move through animal bites or scratches, such as bacteria like *Bartonella* that cause cat scratch fever viruses that cause rabies diseases like ringworm that are caused by fungi. Vector-transmitted (e.g., fleas, ticks, flies, mosquitoes) diseases for which cats and dogs may act as reservoirs for the pathogen. Diseases transmitted from animal feces when parasite eggs are inadvertently eaten by humans, such as Roundworms, toxoplasmosis, coccidia, and salmonella. Diseases

transmitted from animal urine, like leptospirosis (De Miguel *et al.*, 2011).

4. Reverse zoonoses

Reverse zoonoses are diseases that do not normally occur in dogs and cats but can be passed from infected people to their pets, which can make them very sick, example tuberculosis, MRSA, flu disease (Kang *et al.*, 2011)

5. Small companion animals

Over centuries, animals have been domesticated by people who brought these animals into the home environment to share food and shelter. These animals are what we think of as 'pets'. Nearly 1/3 of households in the United States have dogs and cats. Many people live with less traditional pets, including reptiles, rodents, exotic birds, chickens, and arthropods, like tarantulas (Le fleche *et al.*, 2006).

These unusual pets pose different risks to human health and may require additional precautions. Amphibians and reptiles normally have bacteria, like salmonella, that don't cause illness in pets, but may cause illness in people. So people who own pets, like frogs or lizards, should follow certain guideline when cleaning cages or tanks, especially when there are small children in the home. Information about how to handle non-traditional pets can be found on CDC website. This article talks only about dogs and cats (López *et al.*, 2011).

6. Public health role in zoonoses diseases

Local, state, and national public health officials seek to prevent human disease, and that includes zoonotic diseases. Example a child hospitalized because of *Brucella canis*, a bacteria seen in dogs. When the child's laboratory result was communicated to public health officials, they: interviewed the family and determined that a puppy had recently been purchased from a pet store. Tested the dog, and traced the dog and the disease back to the pet store (Dieste-pérez *et al.*, 2014).

Investigated where the dogs originated and followed up with her littermates to see if the dogs or their owners are sick. *Brucella canis* is required to be reported in only a few states, but astute physicians recognize that public health departments are a resource for even informal reporting of zoonotic diseases (EFSA, 2009).

7. Report of zoonotic diseases

For the most part, zoonotic diseases in dogs and cats are not reportable in the United States or elsewhere in the world, except for rabies. Rabies is required to be reported to state health authorities in the United States and in most developed countries (IATA, 2013).

It needs careful follow-up to identify all humans who may have been exposed to an animal with rabies, or even an animal with suspected rabies.

Without treatment before symptoms appear, rabies is a fatal disease in people. All exposed persons are given post-exposure prophylaxis, which is medicine that prevents the rabies virus from spreading in the body (López *et al.*, 2011).

Other zoonotic diseases reporting vary by state. *Brucella canis* is reportable in some states. This disease is being watched as a possible increasing zoonotic problem so it's possible that more states will require reporting. Recently, the Council of State and Territorial Epidemiologists recommended that canine leptospirosis become a reportable disease because it appears to be occurring with increasing frequency in humans.

8. Surveillance of zoonotic diseases

There is no organized surveillance system that counts the number or types of zoonotic diseases occurring in pets and other animals. Sick animals are often treated by independent veterinary clinics. Information regarding the diagnosis of fairly minor zoonoses is unlikely to be reported to any kind of surveillance system. That information should be communicated to the pet owner's health care provider (Muñoz *et al.*, 2012).

When veterinarians see an increase in the number of animals that come into a clinic with a zoonotic disease, it's likely that the information will be communicated through informal networks. Veterinary associations at city, state, national, and even international levels are an excellent way for veterinarians to communicate. The American Veterinary Medical Association and the World Small Animal Veterinary Association websites provide useful information to pet owners (Olsen *et al.*, 2012).

It's important to consider ways to conduct surveillance for zoonotic diseases in pets. Pets share such a close relationship with humans. It's of public health benefit to better understand disease transmission between pets and people. The likelihood of a successful surveillance system increases as more veterinary clinics and hospitals switch to electronic medical records. An effective global network presents a major political, financial, and scientific challenge (Praud *et al.*, 2012).

9. Aware of zoonotic diseases

Both veterinarians and physicians should be aware of zoonotic diseases (Walravens, and Stack 2011)

Veterinarians: They see pet owners in the same office with the pets so public health education about zoonoses can occur in a real time scenario. They are trained to recognize zoonotic disease and may be the first health professional to recognize the occurrence of a zoonotic disease in a home or a community. Without formal reporting systems, it's important that veterinarians communicate potential

health risks to the pet owner and also to the owner's physician (Scholz *et al.*, 2010).

Physicians: It's important to ask about pets in the home as part of a patient's health history. Questions about the kind of pets and the health of those pets. There are so many positive outcomes to having a pet in a home: such as Pets can provide strong emotional support, Pets can provide personal protection or function as service animals, Pets can be an impetus for humans getting more exercise and the process of taking care of a pet may make a person take better care of themselves. The One Health approach encourages open lines of communication between physicians, veterinarians, local medical and veterinary associations (Scholz *et al.*, 2010).

10. Prevention of zoonotic diseases

Vaccinate animals especially against rabies, Provide protection against external parasites like fleas and ticks, Test and treat to control internal parasites, Periodic physical examinations for pets to increase likelihood that vaccinations and dewormings are appropriately done and Contact a veterinarian for examination and treatment of a newly adopted or rescued animals (Turnbull *et al.*, 2007).

Other common-sense precautions for protection of zoonotic diseases:

Removing feces from cat boxes daily, Washing hands after handling animals, Not handling animals that you are not familiar with them, Avoiding animals if you are immunosuppressed, Not letting dogs drink from the toilet, Trying to avoid being licked by animals, Avoid feeding raw meat, Wearing gloves when gardening, and washing hands thoroughly when finished gardening, Not sharing food utensils with pets, Clipping cat claws frequently to lessen the risk of scratches and minimizing the interaction that your dogs or cats have with wildlife, example should not leave pet food outdoors as that can attract wildlife, like raccoons (WHO, 2008).

Corresponding Author

Dr. Abebe Mequanent, Department of veterinary clinical medicine, Tewodros Campus, Gondar University of Ethiopia. Telephone: 091822-0138/0934348664, E-mail: abebequanent@gmail.com

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