

Human health benefits are becoming closely identified with animal health and welfare. In this session, we look at the common links of veterinary, human medical, environmental and social sciences in promoting and protecting our shared health.

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Human health benefits are becoming closely identified with companion animal health and welfare. Throughout the ages the horse and its health have had significant impact on the ability of humankind to progress. Societies that have used horses as beasts of burden and transportation have made great strides in modernization. However, there are dangerous threats in today's world that require a new approach to solve. Today is a unique time in the history of the world where many factors are converging to spread diseases, and there is a great increase in emerging and re-emerging infectious diseases. There have been 80 new diseases since 1980 including 58 new viruses (e.g. AIDS, Nipah and Influenza viruses). Approximately 60% of these newly emerging diseases have origins in animals (e.g., BSE-Mad Cow Disease), and these new zoonotic diseases threaten the health and welfare of the entire world (1). Recent reports regarding the emergence and dissemination of antimicrobial resistance problems also raise public health concerns as resistant organisms can possibly be transmitted from animals to humans and vice versa.

Emerging and re-emerging infectious diseases equally threaten the equine species as well as other livestock. Some zoonotic diseases that are infectious to horses, ponies and people include (2):

- Actinobacillosis
- Anthrax
- Blastomycosis
- Brucellosis
- Coccidioidomycosis
- Cryptosporidiosis
- Dermatophilosis; Ringworm

- Ehrlichiosis
- Glanders
- Hendra virus infection
- Leptospirosis
- Rabies
- Rhinosporidiosis
- Salmonellosis
- Sporotrichosis
- Venezuelan equine encephalomyelitis
- Vesicular stomatitis
- West Nile virus infection
- Western equine encephalomyelitis
- Yersiniosis (Plague)

Recently, articles in The Horse.com (3) and ProMed (4) have highlighted two veterinarians who died, among 3 others and 5 horses, due to the Hendra virus in Australia. According to ProMed: "Hendra virus (formerly called equine morbillivirus) is a member of the family Paramyxoviridae. The virus was first isolated in 1994 from specimens obtained during an outbreak of respiratory and neurologic disease in horses and humans in Hendra, a suburb of Brisbane, Australia." The Centers of Disease Control and Prevention in the U.S. has the following information (5): "The natural reservoir for Hendra virus is thought to be flying foxes (bats of the genus Pteropus) found in Australia." In order to combat this emerging infectious disease affecting humans and horses, it has been critical that animal and human health experts, as well as other scientific disciplines, work together to discover ways to prevent its spread.

You might believe that because many of these diseases occur in far-off places that we in Alberta should not worry about it. However, we must recall the SARS outbreak (6) and how a disease in China spread so quickly to Canada. It becomes evident that globalization is bringing the world closer together and the relationship of animal and human health is inextricably linked. In May, 2005, the CDC (7) announced the following:

"According to published scientific articles, Severe Acute Respiratory Syndrome (SARS)-like virus has been isolated from civets (Family: Viverridae) captured in areas of China where the 2002-2003 SARS outbreak originated. Shipments of civets are being imported into the United States and further distributed. CDC is banning the importation of all civets immediately until further notice. CDC is taking this action to prevent the importation and spread of SARS, a communicable disease."

What this emerging infectious disease demonstrated is that in the world today many factors can cause the spread of diseases from wild animals to domestic animals to humans. What was once a disease in a faraway place, like West Nile Virus infection, can now suddenly be in our own pastures.

Some of the factors that contribute to the worldwide spread of diseases are:

- One billion people crossing national borders, or 25 people per second and can carry pathogens with them (e.g., SARS);
- Billions of dollars are made illegally importing exotic animals and their pathogens;
- Extensive translocation of animals and people from wars and severe climate events;
- Urban encroachment on animal habitats brings together wild and domestic animals and humans;
- Climate change is shifting vectors (ticks, mosquitoes) to new areas and spreading disease (e.g., ticks surviving in more northern Canadian ecozones);
- Ecosystems (including water) are being destroyed and/or contaminated by fires, dams, logging, mining, urbanization, intensive animal agricultural farming, and many more factors; and
- Globalization of the food supply results in foods being transported faster and farther than ever before.

So what has this to do with you, your veterinarian or your horses? The goal of my presentation is simply to increase your awareness of the complexity of the world we live in today in relationship to you and your horses' health and well-being. I believe that in order to protect and promote human, animal and environmental health, we need a team of experts working together. In order to best accomplish this, I propose that we all need to work together in a One Health approach.

In a One Health approach, we look at the common links of veterinary, human medical, environmental and social sciences in promoting and protecting our shared health. It's obvious to us horse owners, and now the scientists, that there are enormous benefits of animals to human health promotion, and humans to animal health. In order to protect our collective health in the world of today and tomorrow, a One Health approach is needed to shift our focus from looking at an isolated health problem to the broader factors that can contribute to promoting health. Equine veterinarians therefore must consider continually broadening their roles as a "family medicine" doctor to include many other professionals in order to provide the ultimate in health care service. Equine veterinarians are well positioned to provide scientific leadership and expertise to link many experts in the One Health Equestrian Team (Figure 1). For example, in addition to veterinary doctors, the horse owner of today needs the expertise of animal scientists to provide education and research in horse management; engineers to build health barns, stables and horse trailers; farriers to create healthy hooves; economists to manage the business and provide economic well-being; physicians to help investigate the links of human

and animal diseases and anti-microbial resistance; biomedical experts to develop vaccines and diagnostic tests; kinesthesiology experts to study locomotion and improve horse performance; public planning and policy officials to protect our lands and ecosystems; ethnobotanists to discover new therapies from plants; complementary therapists to provide new treatment modalities; nutritionists for horse health; gerontologists to create a new ways of living well in the senior years; medical anthropologists that study social systems and the relationships of people, animals and health; legal experts to keep our horse activities according to the laws; psychologists and behaviourists to help managed the unique relationships of people and their animals; and public and populations health experts to manage disease outbreaks and help us to maintain “hear health.” Although we may not need to bring these experts together all of the time to solve our equine related health problems, it is important to realize that managing our horse world successfully we must tap into the expertise of many disciplines. Bring able to work collaboratively among many disciplines is a founding principle of One Health. As you study this Figure, you will probably come up with more experts who have a role to play in your horse’s health. A challenge face today as horse owners and as equine veterinarians in our busy worlds is knowing when and how to bridge those professions, link them to the client and their facility, and work as a team to establish preventive programs in a holistic, or One Health, approach (8).

Equine veterinarians not only provide medical, surgical and preventive medicine care to animals, they also are in a unique public health position. They can view the social, economic, psychological and other dynamics that contribute to the animal’s health and welfare, as well as the animal’s role in contributing to the human companion’s health and welfare. This window into the horse’s and family’s life provides veterinarians an increased awareness of the importance of social conditions in disease concentrations, interactions and their consequences (9). Following the loss of a horse, leading veterinary practices that employ social counselors to address mental health and provide grief counseling are contributing to both human and animal health. Some grieving clients may progress to serious mental and physical health problems. Veterinarians observe problems impacting the patient’s and family’s life, and they are in a position to approach disease as not just the study of an isolated health problem, but a result of broader social, educational, environmental and psychological concerns. As a profession we must seek ways to redefine our service in equine practice, and be the bridge to bring together many disciplines to serve our clients. As a “family medicine” practitioner we must see the equine patients and clients as living in a complex world with shared environments, shared health concerns, and shared threats to our collective health; therefore requiring shared health care teams. By understanding the One Health approach, we as equine veterinarians and you as the horse owning client have a benchmark to be able to look at the care and welfare of our horses in a totally new way so that we do not just focus on one disease at a time. Disease results from broader social, environmental and emerging challenges of the complex world in which we live. One Health helps bridge the gaps among all professions that can and need to work together with you to better serve our equestrian world.

Summary

The health of our horses in today's and tomorrow's world requires experts in many different disciplines to work as a team to promote and protect equine and human health. The purpose of this presentation is to raise awareness of the emerging and re-emerging infectious diseases that spread between animals and people and to create an understanding of the factors that can spread disease quickly around the world. In an effort to bring the best experts together, the One Health approach provides us a framework to use. We have the responsibility and opportunity now to better serve our equine family members by thinking about how we can unite and work together to protect and promote our shared animal, human and ecosystem health.

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