One Health Newsletter

A quarterly newsletter highlighting the interconnectedness of animal and human health

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This newsletter is dedicated to enhancing the integration of animal, human, and environmental health for the benefit of all by demonstrating One Health in practice.

The One Health Newsletter is a collaborative effort by scientists and health professionals from the following organizations:

- Palm Beach County Health Department
- Florida Department of Health
- University of Florida
- Kahn/Kaplan/Monath/ Woodall One Health Team

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Highlighting the Role of the Veterinary Profession in the One Health Movement through the Celebration of World Veterinary Year and the Eradication of Rinderpest

Tara C. Anderson, D.V.M., M.P.H., Ph.D. and Paul Gibbs, BVSc, PhD, FRCVS

With "World Veterinary Year" drawing to a close, we have an opportunity to reflect on the contributions of the veterinary profession to the One Health movement. With the theme "250 years of veterinary science in the service of animal and human health" and the slogan "Vet for health, Vet for food, Vet for the planet," the Vet2011 initiative has celebrated the 250th anniversary of the veterinary profession through hundreds of international events over the course of the year. In addition, the veterinary profession is concurrently celebrating the eradication of rinderpest, a devastating disease of cattle, which although not zoonotic had significant impacts on animal and public health. Here we will briefly summarize the Vet2011 initiative as well as the One Health significance of the eradication of rinderpest.

Claude Bourgelat is credited with establishing the first veterinary school in Lyon, France in 1761, which resulted in the formal establishment of the veterinary profession. In addition, he is recognized as a pioneer in comparative medicine, appreciating that the study of animal diseases could inform our understanding of diseases in humans (which is now well recognized in the One Health movement). In light of the contributions of Claude Bourgelat to the veterinary profession, multiple organizations within the French veterinary community proposed that 2011 be named "World Veterinary Year" in honor of this 250th anniversary. The founding members of the Vet2011 initiative include the World Organization for Animal Health, or OIE; the French Ministry in Charge of Agriculture; the Higher Council of the Order of Veterinarians; The French National Veterinary Unions' Federation; the French Veterinary Academy; the Veterinary Schools of Alfort, Lyon, Nantes, and Toulouse; and the National Veterinary Services School. Since its inception, hundreds of international associate and corresponding members as well as institutional and business partners have promoted and contributed to the success of World Veterinary Year.

Claude Bourgelat

The main objective of Vet2011 has been "to improve public awareness and remind policymakers everywhere in the world that our profession has been serving humankind for 250 years" and that "modern veterinarians are not only animal doctors and animal welfare advocates, they are also key public health stakeholders be-

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cause of their crucial role in promoting food security by supervising animal production hygiene, controlling zoonoses, monitoring food quality and safety, conducting biomedical research, and protecting the environment and biodiversity." To learn more about the Vet2011 initiative, participating members and partners, the history of Claude Bourgelat, and World Veterinary Year events, please visit the Vet2011 website (http://www.vet2011.org). Although the international closing ceremony for World Veterinary Year will be held in October 2011 at the World Veterinary Congress in Cape Town, South Africa, events have been scheduled through the end of the year.

One of the primary motivations for establishing the first veterinary school in France was to prevent cattle diseases such as rinderpest, making the celebration of its eradication during the 250th anniversary even more momentous. Rinderpest is related to measles, canine distemper, peste-des-petits ruminants, and several viruses found in marine mammals. Affected animals developed fever, discharges from the eyes and nose, erosions of the oral mucosa, diarrhea, and death. Although not zoonotic, in its severest form rinderpest could kill 95% or more of infected animals and therefore threatened rural livelihoods and food security in affected nations.

Cattle carcasses littered a pasture in South Africa in 1900 during a rinderpest epidemic. Courtesy: G.R. Thomson

Rinderpest is thought to have originated as far back as the domestication of cattle in Asia, and has affected cattle and wildlife in Asia, Africa, and Europe. Although considered an "ancient enemy," implementation of disease control and eradication principles in Europe in the 1700s (e.g., slaughter, movement restrictions, burial of animals in lime, inspection of meat) resulted in the consideration of rinderpest as a disease of developing countries by the early 20th century. Subsequent eradication in these areas largely depended on the discovery of an effective rinderpest vaccine that worked well in tropical countries, as well as the adoption of mass vaccination and surveillance programs conducted by local, national, regional, and international organizations. After multiple regional efforts throughout the 20th century, the Global Rinderpest Eradication Programme (GREP) was established in 1994 to coordinate these efforts to achieve eradication. The OIE certified the global eradication of rinderpest in 2010, and a resolution declaring the world free of rinderpest was adopted at the 37th UN Food and Agriculture Organization (FAO) conference in June 2011. Please see the GREP website (http://www.fao.org/ag/againfo/programmes/en/grep/home.html) for more detailed information about the eradication program, as well as interviews and spotlights on the many "faces behind rinderpest eradication." The following FAO media release also contains a time-lapse map of the "retreat" of rinderpest, as well as an interactive timeline regarding eradication efforts since the 1700s: http://www.fao.org/news/story/0/item/35548/icode/en/.

In the spirit of One Health, the eradication of rinderpest is a major animal and public health accomplishment. Its eradication improves food security, trade and prosperity, access to pastoral communities, and public health in previously affected countries. It is fitting that we celebrate this feat, the first eradication of an animal disease and only the second disease to be eradicated by human efforts (after smallpox), in the same year that we celebrate the 250th anniversary of the establishment of the veterinary profession. The veterinary and One Health communities should certainly take this opportunity to reflect on the contributions of Claude Bourgelat as well as the countless individuals, from village leaders to directors of international organizations, that contributed to the eradication of rinderpest. As World Veterinary Year draws to a close, may we all be inspired to continue serving both animal and public health, looking forward to future accomplishments and advancements through improved One Health collaborations.

Rinderpest's eradication improves food security, trade and prosperity, access to pastoral communities, and public health in previously affected countries.

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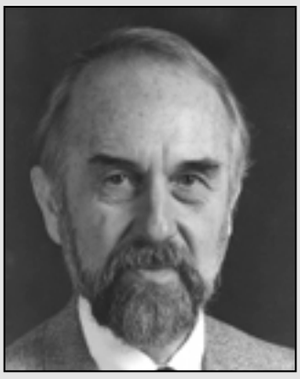
Who Coined the Term "One Medicine"?

Bruce Kaplan, DVM and Cheryl Scott, RN, NP, DVM, MPVM

Answer: Dr. Calvin Schwabe coined the "One Medicine" term and crystallized the concept in the 20th century.



Calvin Schwabe

A re-examination of historically valid references appears to verify that the American veterinarian, Calvin W. Schwabe, DVM, MPH, ScD originally coined the term "One Medicine" and represented it to designate the concept associated therewith (4, 5). Among other reference sources, Dr. Schwabe demonstrated how statements and actions taken by the great 19th century German physician Rudolf Virchow, MD, the father of cellular pathology, bolstered the case for Schwabe's original "One Medicine concept" proposition (5). Dr. Virchow said, "between animal and human medicine there are no dividing lines--nor should there be." (9)

A literature review of Dr. William Osler's writings (6, 7) plus two prominent biographies (2, 3) found no personal usage of the term "One Medicine", but his alliance with veterinary medicine and veterinarians is historically unquestioned, at least during his early teaching and medical career in the 19th century. According to all available documented references, Dr. Osler would have supported Dr. Schwabe's proposal having been strongly influenced by his teacher and pathology mentor Dr. Virchow (who most certainly would have concurred).

Calvin W. Schwabe, DVM, MPH, ScD originally coined the term "One Medicine"

Known as the father of modern medicine and the father of internal medicine, the great Canadian physician Sir William Osler was a 19th and early 20th century practitioner of modern day "One Medicine-One Health" collaborative principles. One example: while teaching at the Montreal Veterinary College, Dr. Osler organized a significant study of parasites in the pork supply of Montreal with one of his most brilliant veterinary students, Albert W. Clement. The two concluded, correctly, that cooking of pork was the best protection against humans contracting parasitic illnesses when in-

William Osler

Dr Rudolf Virchow, the father of cellular pathology, said "between animal and human medicine there are no dividing lines--nor should there be."

One Health recognizes that humans do not exist in isolation, but are part of a larger whole, a living ecosystem, and that activities of each member affect the others.

gesting this meat. Dr. Clement, a veterinarian, later became a President of the United States Veterinary Medical Association, now the American Veterinary Medical Association or AVMA. (1, 2, 3).

Several readers of the One Health Initiative website have asked how the misleading assumption developed that Dr. William Osler coined the term. It appears that this issue originated from a 2000 publication on page 231 (8) stating "The phrase "One Medicine" is attributed to Sir William Osler who studied with Virchow and worked with other veterinarians and physicians who were involved in both medical branches." No reference for this assumption was cited although one other reference was noted relative to Virchow's appreciation for veterinary medicine (9) vis-à-vis human medicine. Regrettably, this unsubstantiated comment has been perpetuated since in other One Health publications.

Today, "One Medicine" is commonly referred to as "One Health" worldwide. This terminology change occurred during the first decade of the 21st century. "One Health" is the evolution of the earlier used term "One Medicine," which historically implied the crossing over between veterinarians and physicians. One Health recognizes that humans do not exist in isolation, but are a part of a larger whole, a living ecosystem, and that activities of each member affect the others. Thus, One Health considers health as a whole: that of humans, animals, and the environment they exist on.

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One Health opinions, comments, and verifiable corrections are welcomed by the One Health Initiative website. Please submit to kkm@onehealthinitive.com for consideration.

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UCDAVIS VETERINARY MEDICINE

Fatal Respiratory Infections in Endangered Gorillas Are Linked to Human Contact

Daniela Hernandez, PhD

New Study Indicates that Ecotourism May be Contributing to the Decline of Mountain Gorillas in African Preserves

There are currently fewer than 800 living mountain gorillas in the world.

In a study published online this week in the journal *Emerging Infectious Diseases*, a team of researchers report that a virus that causes respiratory disease in humans infected and contributed to the deaths of mountain gorillas in Virunga National Park. This finding raises questions about the safety of ecotourism for endangered species.

The study, which appears in the April issue of the journal, was conducted by scientists at Columbia University's Center for Infection and Immunity (CII), Roche 454 Life Sciences, the UC Davis Wildlife Health Center, and the Mountain Gorilla Veterinary Project, a US-based non-profit organization.

This study suggests that gorillas may be susceptible to human pathogens.

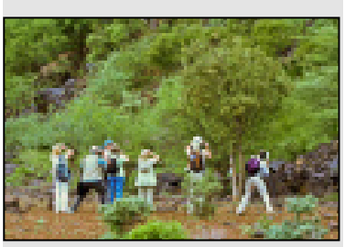
Mountain gorillas (Gorilla beringei beringei) live primarily in Rwanda, Uganda, and the Democratic Republic of Congo in Bwindi Impenetrable National Park and Virunga National Park, which houses about a third of the world's remaining gorilla population. Despite international efforts to protect this endangered species, there are currently fewer than 800 living mountain gorillas in the world.

Now, this study, which focuses on an outbreak of respiratory disease in the Hirwa group of mountain gorillas in 2009, suggests that these animals may also be susceptible to human pathogens. Infectious diseases, especially respiratory ones, are the second leading cause of sudden deaths among mountain gorillas, after poaching.

Growing ecotourism has increased interactions between humans and wild animals, intensifying the chance for disease transmission.

Growing ecotourism has increased interactions between humans and wild animals living in these parks, intensifying the chance for disease transmission. While ecotourism has heightened awareness of the need to safeguard endangered species, world travel also has the potential to quickly spread disease.

Local authorities have recently tried to reduce animals' exposure to potentially harmful pathogens by limiting the number of tourists visiting wildlife parks and requiring visitors to wear protective masks. Despite these efforts, the frequency and severity of respiratory disease outbreaks among gorillas have been on the rise. In fact, of the 12 gorillas in the Hirwa group, 11 showed classic symptoms of respiratory infection, including coughing, runny nose, and lethargy. Two of these gorillas, an adult female and her male infant, died.



Using state-of-the-art molecular methods, CII researchers found evidence of respiratory tract infection with human metapneumovirus (HMPV) and bacterial pneumonia in the female's lungs, throat, and nose.

Further tests confirmed that HMPV found in the lungs of sick gorillas was closely related to strains circulating in South Africa, over 1,000 miles away, suggesting that tourists may have carried the virus into the parks.

'Pure' HMPV infections typically result only in mild damage to the respiratory system, suggesting that an interaction between HMPV and bacterial pneumonia may have been the cause of death. This observation is consistent with other studies that have shown that respiratory viruses like HMPV and H1N1, can make hosts more sus-

ceptible to opportunistic infections, like pneumonia.

CII investigator and first author, Gustavo Palacios, stated, “we usually think of viruses as jumping from wildlife to humans, but what we often don’t realize is that this is a two-way highway.”

“This study illustrates the importance of global commitment to the One Health Initiative,” commented CII Director, Dr. W. Ian Lipkin. The One Health Initiative is a movement whose aim is to promote collaboration among environmental, agricultural, veterinary, and human health sectors. Says Dr. Lipkin, “Conservation efforts must be expanded to protect wild animals from human pathogens to which they likely lack immunity.”

“We usually think of viruses as jumping from wildlife to humans, but what we often don’t realize is that this is a two-way highway.”

Dr. Daniela Hernandez is a science writer at the Center for Infection and Immunity. She has worked at the Michael J. Fox Foundation for Parkinson's Research and National Geographic Channel and recently completed a AAAS Mass Media Fellowship at the Los Angeles Times.

What You Need to Know About Armadillos and Leprosy

W. J. Loughry, PhD

There has been a recent flurry of media interest about the link between armadillos and human cases of leprosy in the United States. Aside from humans, the nine-banded armadillo (*Dasypus novemcinctus*) is the only vertebrate known to exhibit naturally occurring infections with *Mycobacterium leprae*, the causative agent in producing leprosy. Although there are 21 species of armadillo found in various parts of Latin America, the nine-banded armadillo is the only one found in the U.S. (note also that none of these other species has ever tested positive for infection with *M. leprae* in the wild).

Jim Loughry with armadillo

The reason for the recent media attention stems from a paper published by Truman et al. in the *New England Journal of Medicine* this spring (vol. 364:1626-1633). They showed that the strain of *M. leprae* infecting armadillos was genetically identical to that found in indigenous human cases of leprosy in the U.S. This was interpreted as strong evidence that leprosy is a zoonotic disease, and that nine-banded armadillos may represent an important source of infection for humans. Interestingly, earlier genetic work by Monot et al. (2005, *Science* 308:1040-1042) showed that the strain of *M. leprae* found in armadillos was not from the New World. As armadillos are strictly New World animals, the implication was that they were probably exposed to the bacterium subsequent to the colonization of the Americas by Europeans and their African slaves. Thus, it seems likely transmission of infection has gone in both directions: from human to armadillo, and from armadillo to human.

Photomicrograph of *Mycobacterium leprae* taken from a leprosy skin lesion (CDC)

From a public health perspective, are the links between armadillos, humans, and leprosy a major cause for concern? Generally speaking, the answer is no. There are several reasons for this. First, leprosy is a relatively rare disease. Even in populations of armadillos where infection is present, prevalence typically ranges from about 5-20%. Not only that, but infection is not present in many populations. Although nine-banded armadillos are currently found across the entire southern United States, from Florida to west Texas, infection is largely confined to a narrow strip along the west

side of the Mississippi River and the Gulf of Mexico coast from Louisiana to south Texas. Thus, most people are unlikely to encounter an infected armadillo. Second, leprosy is a treatable disease and many people are not susceptible to infection. Consequently, few people are likely to become infected and those that are can be easily helped. Finally, it appears casual contact with an infected armadillo is unlikely to generate infection. *M. leprae* requires cool temperatures (such as found in the extremities of humans) to propagate. Nine-banded armadillos have one of the lowest metabolic rates reported for any mammal. Because of this, and the resulting low body temperature of the animals, infection with *M. leprae* is systemic, spreading through many of the internal organs. Infected armadillos may shed bacteria via the respiratory tract, but it seems that routine handling does not usually generate sufficient exposure to lead to infection.

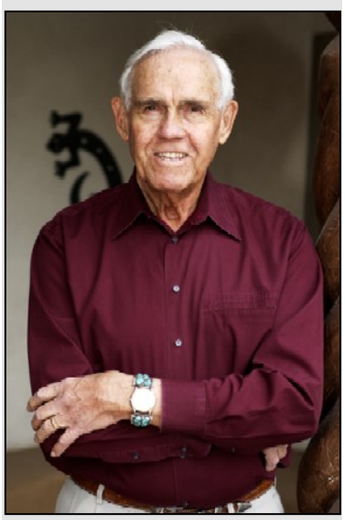
While the overall risk to humans of contracting leprosy from an armadillo is low, certain precautions are advisable.

While the overall risk to humans of contracting leprosy from an armadillo is low, certain precautions are advisable. As just mentioned, because infection occurs internally, there is no way to identify an infected animal from external symptoms. Thus, persons wishing to minimize their risk should avoid exposure to any and all armadillos. Although the evidence is mixed, some studies have reported a link between human cases of leprosy and exposure to armadillos. Usually, this involved fairly intimate contact by individuals that were killing and consuming the animals. Obviously, the simplest way to eliminate the potential for infection is to discourage individuals from hunting and eating armadillos. Short of that, certainly one should recommend wearing gloves when there is any possibility of coming into contact with the body fluids of an animal. Finally, because infected armadillos may shed bacteria from the respiratory tract, the possibility exists that they may contaminate soil within their burrows and in areas where they forage. At present, it is not clear how likely such a scenario might be. Nonetheless, individuals wishing to reduce the potential for exposure should consider avoiding working in soils utilized by armadillos (or at least not without gloves).

The simplest way to eliminate the potential for infection is to discourage individuals from hunting and eating armadillos.

To conclude, it is important to mention that we do not know exactly how *M. leprae* is transmitted in any situation, i.e., from armadillo to armadillo, from armadillo to human (and vice versa), or from human to human. Thus, recommendations about ways to minimize the risk of contracting leprosy from an armadillo must be viewed as best guesses. Nonetheless, even though the risk is quite low, the available evidence does indicate that leprosy is a zoonosis. Consequently, individuals experiencing consistent contact with nine-banded armadillos should be made aware of that fact, and alerted to ways to minimize their chances of acquiring infection.

Dr. Jim Loughry is Professor of Biology at Valdosta State University, Valdosta, GA. jloughry@valdosta.edu



Larry J. Gordon

Are We All Sanitarians?

Larry Gordon, MS, MPH, DHL, DEAAS ; Sanitarian

Jerrold M. Michael ScD, DrPH, DEE, Rear Admiral, USPHS (Ret.) recently wrote: “While doing research on an article on the National Board of Health, which existed between 1879 and 1883, I learned a lot more about the first Surgeon General, Dr. John Maynard Woodworth. Of interest is that Dr. Woodworth's headstone notes that he was a Naturalist, Physician, and Sanitarian. We recognize that the term Sani-

Environmental factors that may adversely impact human health include: air, food, and water contaminants, radiation, toxic chemicals, disease vectors, safety hazards, and habitat alterations.

tarian was once used as a synonym for public health advocate, but we may choose to note that the first SG was a sanitarian..."

That commentary reinforces the fact that the field generally now recognized as the area of practice of "the sanitarian," namely environmental health, is an important area of practice for a wide spectrum of disciplines and professionals. "Comprehensive" environmental health practice thus requires and benefits from the involvement of chemists, geologists, biologists, sanitarians, meteorologists, physicists, physicians, psychologists, nurses, economists, laboratory scientists, industrial hygienists, dentists, veterinarians, educators, sociologists, engineers, architects, attorneys, planners, political scientists, statisticians, journalists, electronic information specialists, epidemiologists, social scientists, political scientists, ecologists, public administrators and planners, as well as those who have been formally educated in the art and science of environmental health practice.

As the field is comprehensive, its effective leadership is profoundly complex, frequently controversial, and invariably in need of a wide range of individual capacities and initiatives. Many of our great environmental health leaders have been dedicated individuals who have achieved eminence not because they had the right pedigrees or belonged to the right organizations, but because they had the right vision, the right information, and the right leadership at the right time.

That is clearly true of some of the icons in the overarching field of public health. Lemuel Shattuck was a publisher, Edwin Chadwick was a lawyer, Charles E. A. Winslow and William Thompson Sedgwick were categorized as sanitarians, and Albert Lasker was an advertising specialist. As time progresses, the mantle of public health leadership continues to fall to those who are perceived as "having earned it."

The commonly accepted definition of environmental health is that promulgated in 1992 by the Committee on the Future of Environmental Health (1). Following widespread peer review, the committee noted that "Environmental health and protection is the art and science of protecting against environmental factors that may adversely impact human health or the ecological balances essential to long-term human health and environmental quality. Such factors include, but are not limited to: air, food, and water contaminants; radiation; toxic chemicals; disease vectors; safety hazards; and habitat alterations."

That definition remains a hallmark of the field. It does, however, call for statements of vision that can set out standards for worldwide commitment to an enhanced environment:

- We should envision a world in which environmental health measures contribute substantially to preventing disease and disability, as well as reducing health-care costs.
- We should envision a world in which environmental health is considered to be an important entitlement for the common good.
- We should envision a world in which environmental health problems are measured and defined prior to designing and implementing control measures.
- We should envision a world in which environmental health efforts are based on sound risk assessment, public health assessment, and epidemiology.
- We should envision a world in which the primacy of prevention measures is un-

derstood and practiced.

- We should envision a world in which environmental health measures are designed for optimal net impact rather than zero risk.
- We should envision a world in which ecological considerations are understood to be components of environmental health because, in the long run, a deteriorated environment is a threat to public health and the economy.
- We should envision a world in which the citizenry understand that a quality environment is an important factor in economic vitality and productivity.
- We should envision a world in which environmental health outcomes contribute to minimizing social problems.
- We should envision a world in which the quality of the environment contributes to educational achievement.
- We should envision a world in which quality of life is enhanced by effective environmental health services.

- We should envision a world in which broad environmental health communication bridges are constantly traveled by the public, the media, and policy makers.
- We should envision a world in which policy leaders seek environmental health input prior to developing policy impacting environmental health.

If we share such a vision, are we all sanitarians?

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Larry Gordon is a One Health supporter/advocate and has a most distinguished Public Health/environmental health career. Please see: http://hsc.unm.edu/library/spc/Gordon/biography.shtml.

NEON (The National Ecological Observatory Network)

Yuri Springer, PhD

Recent decades have seen profound changes in the interactions between human populations and natural ecosystems. Through processes such as climate change, shifting land use practices, and the spread of non-native species, humans have dramatically altered the geographic distributions of numerous organisms and the structure and dynamics of most, if not all, of the earth's ecosystems. At the same time, urban expansion and globalization have dramatically increased connectivity between human populations and these ecosystems, resulting in more frequent and novel interactions. Examples include probable links between the emergence of a variety of zoonotic pathogens and the spread of human populations into wildland areas, as well as changing patterns of resource use (e.g. logging, agriculture, hunting)[1].

NEON is designed to investigate links between anthropogenic, environmental, and ecological processes at continental and multi-decadal scales.

While these unfolding feedbacks between anthropogenic, environmental, and ecological processes will often be complex and difficult to explain and predict, their consequences for biodiversity conservation, ecosystem productivity and function, and human health will, in many cases, be dramatic and perhaps catastrophic. This pro-

vides ample motivation to study these emerging linkages. We are participants in a natural experiment of unprecedented scale and importance, and the National Ecological Observatory Network is being created to collect the data that will allow us to understand and respond to the outcomes.

NEON[2] is designed to address the National Research Council's "grand challenges in environmental science"[3] by investigating links between anthropogenic, environmental, and ecological processes at continental and multi-decadal scales. Headquartered in Boulder, CO and funded by the National Science Foundation (NSF)[4], the NEON project will comprise a network of 62 sampling sites, distributed across the range of climatic zones and vegetation communities found within the United States and Puerto Rico[5]. For example, candidate sites to represent the "southeast domain," which contains the southern portions of the Gulf Coast states, half of Georgia and South Carolina, and all of Florida except for the state's southern tip, include the University of Florida's Ordway-Swisher Biological Station[6] east of Gainesville, FL, the Nature Conservancy's Disney Wilderness Preserve[7] south of Orlando, FL, and the University of Georgia's Jones Ecological Research Center[8] southwest of Albany, GA. At each site, NEON will use standardized methods to collect a wide range of environmental and biological information over a thirty-year period. After several years in the conception and planning stages, NEON received construction funding from the NSF in August of 2011 to begin building the observatory's physical infrastructure, a process expected to last five to seven years. In the months ahead, NEON scientists will continue to formulate, refine, and field test sampling protocols to collect a broad suite of ecological data that will include measurement of the disease prevalence of a variety of zoonotic pathogens.

Photo by Tyler Jones

The University of Florida has officially partnered with a National Science Foundation funded program to allow measurements and data collection related to the Earth's ecological health to occur on UF's Ordway-Swisher Biological Station.

Three sampling approaches will be combined to achieve NEON's general objectives. First, ground-based sampling at each site will include passive, sensor-based measurements of a range of abiotic parameters (e.g., meteorological conditions, aquatic nutrient concentrations, soil carbon ,and water fluxes) as well as active, technician-based monitoring of a suite of biological phenomena associated with microbial, insect, bird, small mammal, and plant populations. Second, airborne measurements will be obtained from remote-sensing instrumentation (e.g., spectrometry, LiDAR) aboard small aircraft that will fly over each site multiple times per year. Finally, information from ground-based and airborne sampling will be integrated with data from

large external datasets such as those associated with NASA's MODIS satellite[9] and the US census[10].

The synthesis of diverse ecological, environmental, and social data across multiple spatiotemporal scales, facilitated by the use of standardized sampling protocols and infrastructure, will allow NEON to provide unprecedented insights into processes of environmental changes, their mechanistic underpinnings, and their ecological consequences. All data generated by NEON monitoring and data analyses, as well as biological specimens archived as part of ground-based sampling, will be open-access and freely available to researchers, educators, and the public.

Field crew measuring plant biomass in Ordway-Swisher Biological Station. August 2010. Photo by John Hayes

As mentioned previously, novel and emerging feedbacks between human populations and natural ecosystems, and changes in connectivity between the two, will likely have important consequences for issues related to public health. Changes in the physical environment, such as increased frequency and/or magnitude of heat waves and extreme storms, raise human risks associated with physiological stress and damage to habitat and infrastructure. Changing environmental conditions may facilitate geographic range expansions of disease vectors and accelerate replication and/or transmission rates of pathogens. Modulation of the structure of biological communities, including reductions in biodiversity and increased relative abundance of "generalist" species or those commensal with humans, could have profound consequences for the epidemiology of infectious diseases.

The synthesis of diverse ecological, environmental, and social data across multiple spatiotemporal scales, facilitated by the use of standardized sampling protocols and infrastructure, will allow NEON to provide unprecedented insights into processes of environmental changes, their mechanistic underpinnings, and their ecological consequences.

In recognition of these and other potential outcomes NEON will collect data and archive biological samples related to mosquito-, tick-, and small mammal-borne diseases. Using methods including CO_2 light trapping, drag sampling, and Sherman live trapping, NEON will quantify the prevalence of pathogens such as West Nile virus, Lyme disease bacteria, and hantaviruses at select study sites. Co-location of disease sampling with the full suite of NEON observatory measurements will permit the empirical consideration of a broad array of potential biotic and abiotic drivers of disease dynamics, and the 30-year duration of sampling will elucidate temporal patterns of infection prevalence spanning intra-annual and multi-decadal time scales. Working with partners in academic research institutions and state and federal public health agencies to refine sampling and analytical protocols and contextualize results, NEON data will provide novel and powerful insights into the dynamics of infectious disease in our rapidly changing environment.

For references and additional information, please visit: NEON_References-Additional_Information.pdf

Dr. Yuri Springer is a Disease Ecologist at the National Ecological Observatory Network.

Strengthening One Health Approaches Through Tabletop Simulation Exercises

Katinka de Balogh, Sigfrido Burgos, Morgane Dominguez, and Juan Lubroth

The Food and Agriculture Organization of the United Nations (FAO) understands the One Health approach as a collaborative, cross-sectoral, multidisciplinary mechanism to address threats and reduce risks of infectious diseases at the animal-human-ecosystem interface at international, regional, national, and local levels. It strategically builds on the lessons learned from, and achievements of, the responses to H5N1 avian influenza and H1N1 epizootics. It is acknowledged as a feasible and viable model to address the multidimensional challenges that are rapidly evolving in the world. Among the tools within One Health, simulation exercises are strongly recommended owing to its applicability and usefulness in real emergency situations.

The Food and Agriculture Organization, with the financial support of the United States Department for International Development (USAID), and in close collaboration with the World Health Organization (WHO) and the Health Protection Agency of the United Kingdom, has developed tabletop and field simulation exercises for H5N1 avian influenza and is presently developing a number of simulation exercises for other zoonotic diseases. Building on these experiences in organizing tabletop simulation exercises, FAO has developed a toolbox which can be provided on request to assist countries with the organization of such exercises. In addition, FAO can provide a series of training courses on how to organize tabletop simulation exercises.

The aim of tabletop simulation exercises is to preemptively identify the strengths and weaknesses of a country's contingency plans.

The aim of tabletop simulation exercises is to preemptively identify the strengths and weaknesses of a country's contingency plans. They also serve to examine the communication, coordination, and cooperation between different sectors involved in disease prevention, detection, and control in animal and human populations. A wide variety of participants from local, national, regional, and international institutions attend these exercises because of concerns that high impact diseases could be introduced into countries and territories with potentially devastating consequences on food security, animal and human health, national stability, economic progress, social development, and rural and urban livelihoods.

To give one example, between 2003 and August 2, 2011, a total of 63 countries and territories throughout the world have experienced outbreaks of avian influenza A subtype H5N1 (H5N1 AI) in domestic poultry and/or wild birds. During this timeframe the cumulative number of confirmed human cases of H5N1 AI reported to WHO is 562. Of these, 329 resulted in death. The H5N1 AI case illustrates how a virulent infectious disease can spread across countries and continents. Cognizant of these hazards and threats, the international agencies responsible for public and animal health have stressed the importance of disease surveillance in animal and human populations, along with strengthening of capacities in relation to animal and human health emergency preparedness and response. Tabletop simulation exercises allow testing, in a cost-effective manner, of the available contingency and emergency plans.

Institutional activities, management, responses, and collaborations are assessed while the participants navigate through the different sessions. One may ask: how are these simulations run?

A realistic scenario adapted to local conditions is developed with knowledgeable local focal points. The two-day exercise is organized in a large meeting room fitted with working group tables and is attended by 40 to 50 participants that are divided into four groups, each with a facilitator. All participants receive the same outbreak scenario that runs over four sessions with related questions. A large map is placed on a central table to enable better visualization of the locations of disease outbreaks, to grasp a geographic understanding of affected areas, and to illustrate the logistics required to implement measures. In addition, some of the discussions take place around the map and this was found to foster discussion and interactivity between the different groups especially since different professionals "see" the problem through their specific viewpoints. During plenary sessions, the groups exchange their findings and decisions. Mock press conferences are held for participants to respond to challenging questions posed by participants role-playing as interviewers and journalists. This enables the participants to practice risk communication in a safe environment.

Table top simulations can be followed by onsite farm or field exercises.

Additionally, macro-level tabletop simulations can be followed by micro-level farm or field exercises. The latter encompasses on-site work in farms, with on-farm activities such as wearing protective clothing, gloves, goggles, and boots; simulating culling and disposal of carcasses; cleaning and disinfection; decontaminating animal yards; communicating via radio with authorities; and yellow-taping and quarantining of premises, among other tasks. These simulation exercises contribute to the strengthening of national emergency preparedness and response capacities. The many lessons learned during these exercises should be easily adapted and applied to other emergencies and diseases as needed. All exercises are held in the language of the country where it is taking place along with simultaneous translations of the plenary sessions and the mock press conferences.

Prevention of emergence and cross-border spread of human and animal infectious diseases is a global public good that benefits all countries, peoples, and generations.

Transnational economic and cooperation bodies as well as animal and human health agencies must recognize that organizing tabletop simulation exercises on zoonotic and other high impact disease outbreaks is an effective tool for improving local, national, regional, and international levels of preparedness and response. Emphasis must be given to the fact that prevention of emergence and cross-border spread of human and animal infectious diseases is a global public good that benefits all countries, peoples, and generations. The reports that result from these exercises help countries identify and analyze the strengths, weaknesses, partners, and needs that currently exist, and for these to be addressed by national authorities for enhancing the country's preparedness and response capacities.

In 2010, FAO assisted Mauritania and Ukraine with integrated simulation exercises for highly pathogenic avian influenza. More information on these exercises as well as on the toolbox and the training courses on the organization of such simulations can be obtained from the corresponding author.

Katinka de Balogh, Sigfrido Burgos, Morgane Dominguez, and Juan Lubroth are with the Animal Health Service, Animal Production and Health Division, Agriculture and Consumer Protection Department in the Food and Agriculture Organization of the United Nations.

Engaging Veterinarians in Public Health: One County's Efforts

Jenifer Chatfield, DVM and Barbara Will

We are all aware of the importance of integrating the entire public health community in planning and response efforts as we strive to be better prepared for any disaster to ensure minimal damage and a quick recovery to the global community.

At times, cultivating community partners from different professional fields can prove challenging, however, with the constant threat of severe weather in our state, hurricane preparedness is a good starting point. Veterinarians are trusted and credible community partners and can contribute significantly to an emergency response whether the disaster involves disease or large property destruction. Veterinarians may be able to provide epidemiology expertise with their knowledge of "herd health" principles. Additionally, veterinarians can provide leadership for the local Medical Reserve Corps (MRC), a volunteer organization that supports Emergency Support Function #8 - Public Health and Medical Services (ESF-8) and is administered by the County Health Department (CHD). Veterinary professionals can also perform animal and human decontamination at hospitals and shelters. One of the biggest obstacles to effective engagement of veterinarians in emergency preparedness and response is the veterinary community's lack of awareness of their role in public health and emergency preparedness. In fact, a common question from public health partners is "How do we engage our vets?" This article describes how one CHD is engaging their veterinary community as public health response partners.

One of the biggest obstacles to effective engagement of veterinarians in emergency preparedness and response is the veterinary community's lack of awareness of their role in public health and emergency preparedness.

In February 2010, the Manatee County Health Department (MCHD) invited the State's Veterinary and Agriculture Liaison to a meeting with their internal preparedness team consisting of the MCHD Administrator, an Environmental Supervisor, the Preparedness Planner, and a Preparedness Project Coordinator. The goal was to develop a more collaborative and collegial relationship with the veterinary community, and to better integrate veterinarians in community all-hazard disaster response. The existing relationship with local veterinarians consisted of regulatory correspondence related to rabies alerts and biohazardous waste management.

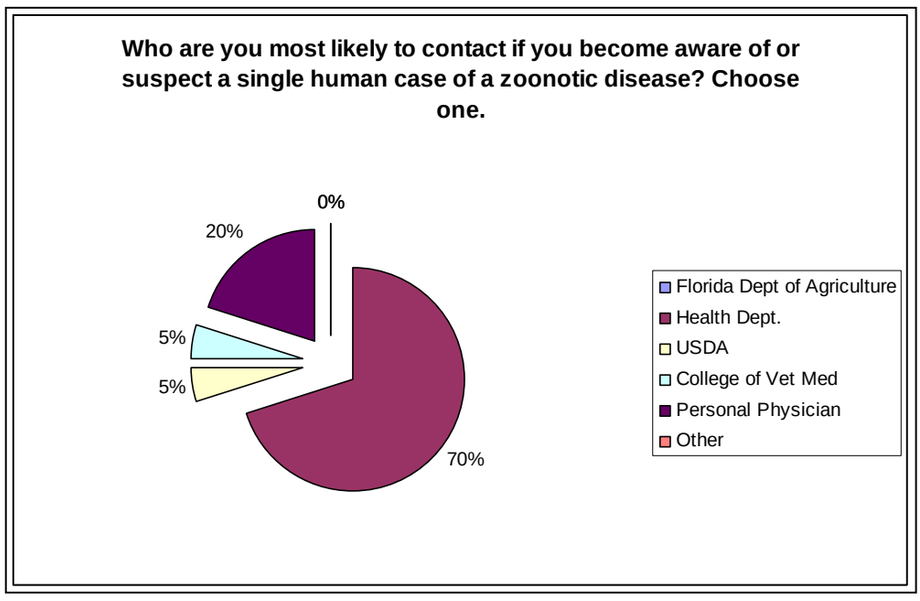
Over the next six months, a founding leader of the Manatee County Veterinary Medical Society became a valuable contributing member of the group, as did representatives from Manatee County's Division of Emergency Management (DEM) and Animal Services (ESF-17). Following much discussion, the group decided that an accurate assessment of the veterinary community's public health preparedness and emergency response awareness was needed. In order to encourage local veterinarians to participate in this "resource assessment," the Department of Health (DOH) offered a continuing education (CE) program in conjunction with the routine monthly Manatee County Veterinary Medical Society meeting. To encourage veterinary participation, the veterinary society obtained private sponsorship for the dinner associated with the meeting. The CE lecture provided at the meeting emphasized the veterinarian's role in community recovery and the typical zoonotic diseases of public health interest following disasters. The lecture generated active audience participation with lively discussion. Additionally, the DEM provided detailed, full-color GIS maps displaying the location of all licensed veterinary facilities in relation to the county's flood zones, using updated data provided by the CHD.

A survey was administered to assess the veterinarians' awareness, knowledge of, and interest in disaster preparedness.

The 20 question survey included questions about county of practice, gender, current preparedness practices as business owners, familiarity with response structure, knowledge of both animal and human reportable diseases and related actions, and knowledge of zoonotic disease incidence within their practice.

During the meeting, a survey was administered to assess the veterinarians' awareness, knowledge of, and interest in disaster preparedness. In order to receive a certificate for the CE credit, the survey had to be completed and returned that evening. The 20-question survey included questions about county of practice, gender, current preparedness practices as business owners, familiarity with response structure such as Incident Command System (ICS), knowledge of both animal and human reportable diseases and related actions, knowledge of zoonotic disease incidence within their practice, primary information sources, and interest in joining organized teams such as the State Agriculture Response Team (SART) or the MRC. The survey was largely based on a prior survey developed for online distribution by a previous Polk County EIS fellow, but was tailored to Manatee County needs.

Twenty surveys [26% of all licensed DVMs (Doctors of Veterinary Medicine) in the county] were distributed at the meeting. The average time in practice for respondents was 17 years and the gender distribution was nearly equal with 55% male and 45% female respondents. The survey results indicated interest in preparedness and emergency response as a partner to public health, but also revealed several gaps in knowledge related to disaster preparedness and response. One interesting finding was that 20% of respondents would contact their personal physician rather than their local health department if they suspected or knew of a human case of a reportable zoonotic disease. Eighty-five percent of respondents were interested in zoonotic disease training and only 15% of respondents had a continuity of operations plan (COOP) in place at their practice.



The results of the survey confirmed that the veterinary community had limited knowledge pertaining to zoonotic disease response procedures and public health disaster preparedness. Due to the small sample, these results may not accurately represent all veterinarians in Manatee County; therefore, results should be interpreted with caution. The survey results are still a useful aid for CHDs in their engagement of veterinarians in disaster preparedness and public health efforts.

The survey information was shared with the Manatee County Veterinary Medical Society's leaders, and additional information regarding public health issues and preparedness was distributed to the Society's members. The local veterinarians have continued discussions with MCHD and Manatee County Emergency Management Leaders regarding their role in public health and preparedness. The subsequent meetings resulted in a joint event organized by the MCHD and the Manatee County

Veterinary Medical Society to perform rabies titers for veterinary staff. The MCHD performed the sample collection and submission and the veterinarians paid the lab costs. Several local veterinarians joined the newly formed Manatee County Medical Reserve Corp (MRC). Veterinarians can join the MRC and participate as leaders and in other roles as defined by the CHD Administrator.

The survey data is summarized in the table below. In addition to these findings, several responders provided unsolicited, sometimes contradictory, comments to their answers at the end of the survey, suggesting that a comment field should be included for individual questions in future questionnaires.

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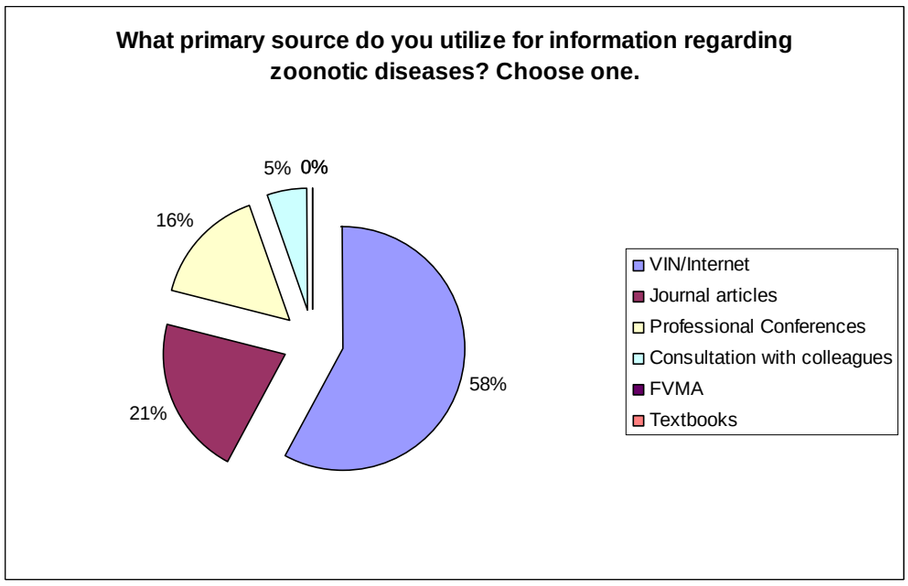
The survey information was shared with the Manatee County Veterinary Medical Society's leaders, and additional information regarding public health issues and preparedness was distributed to the Society's members.

Survey Question	Yes %	No %
Do you provide your clients with printed information regarding zoonotic diseases?	85	15
Do you have any of the following plans in place at your clinic:		
Organized training for new employees including injury prevention, zoonotic disease infection control procedures, and radiation safety?	70	15
A Continuity of Operations Plan or COOP?	15	70
Are rabies vaccinations up to date for all staff who handle animals?	30	65
Are you familiar with the following:		
Incident Command System (ICS)?	15	85
State Agricultural Response Team (SART)?	70	30
Florida Veterinary Corps?	50	50
Are you interested in the following:		
Partnering with the health dept for disaster recovery efforts at the county's Emergency Operations Center (EOC)?	65	30
Providing assistance to a pet-friendly shelter?	65	25
Partnering with SART/USDA for disaster recovery efforts?	75	20
Participating with Manatee County VMS Preparedness?	75	5
Do you know the following:		
Where to find a current list of reportable diseases for FDACS/USDA?	65	35
Where to find a current list of reportable diseases for the health dept?	50	50
How to contact your state agricultural veterinarian?	75	25
How to contact your state public health veterinarian?	80	15
How to contact your county health department (CHD)?	85	10
Have you ever been contacted by your county health department regarding disease control or epidemiological issues?	10	90
Do you suspect that you or any of your staff have ever been infected with a zoonotic disease from an outbreak in animals?	15	85
Have you ever done the following:		
Contacted FDACS?	10	90
Accessed the FDACS website?	20	80
Contacted the health dept?	50	50
Accessed the DOH website?	25	75
Have you received specialized training in public health?	0	100
Would you be interested in the following:		
Preparedness training such as avian influenza or hurricane response training	65	25
Zoonotic disease training and the associated impacts on human health	85	5

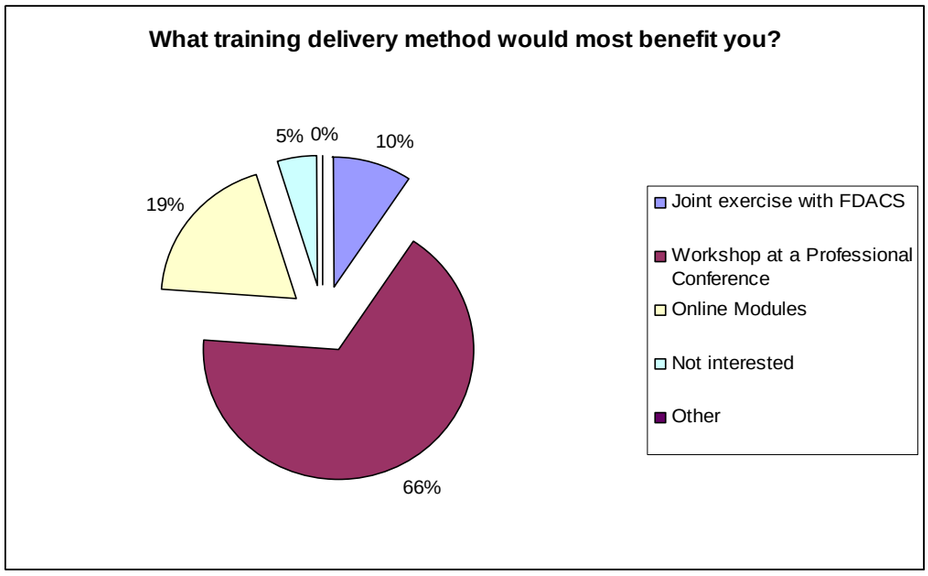
A face-to-face meeting where veterinary practitioners and public health officials are able to get to know each other, identify areas of common interests, and embrace each other as community partners can be valuable towards cultivating a productive and amicable relationship between them.

Photo courtesy of USDA

The data collected in this simple outreach effort will help direct further efforts in engaging the local veterinarians in public health and providing a better integrated disaster response in Manatee County.



A face-to-face meeting where veterinary practitioners and public health officials are able to get to know each other, identify areas of common interests, and embrace each other as community partners can be valuable towards cultivating a productive and amicable relationship between them. Survey respondents (66%) indicated a preference for face-to-face training workshops at professional conferences. Other long-term objectives of the MCHD are to gather emergency contact information from all the county's practicing veterinarians and to obtain permission to use their facilities to aid and possibly shelter lost or stray animals if needed after a disaster. Future meetings will focus on more routine public health issues to promote safe pet ownership through continuing education topics such as rabies and other zoonoses.



The data collected in this simple outreach effort will help direct further efforts in engaging the local veterinarians in public health and providing a better integrated disaster response in Manatee County. Similar activities may provide ample opportunity for public health officials and county health departments statewide to cultivate stronger community partnerships with their local veterinarians.

Dr. Jenifer Chatfield is the H1N1 Veterinary Agriculture Liaison and Planner, Florida Department of Health, Environmental Health.

Barbara Will is an Environmental Health Supervisor at the Manatee County Health Department.

The American Nurses Association and the One Health Initiative

Holly Carpenter, BSN, RN

Consider the following tragic situations: Living and dead animals, feed, manure, urine, and production operations congregated on a small land area (US Environmental Protection Agency's definition of Animal Feeding Operations). Fish in the wild, such as King Mackerel and Swordfish, contain unsafe levels of mercury. Herds are given antibiotics to keep them healthy as a precautionary measure, not to cure an illness. Cows are given hormones to increase their milk production. All of these are harmful not only to the animals, but to human and environmental health as well.

The American Nurses Association (ANA) acknowledges this powerful connection and strives to increase nurse awareness and action in environmental health. In December 2010, the ANA joined the One Health Initiative to demonstrate nurses' acknowledgement that animals and humans all share one environment and that the individual health of animals and the actions of humans affect all life on earth. Negative health impacts on any individual group—animals, humans, or the environment—affect the health of all three.

Human health is tied closely to animal health in many ways. Humans eat animals and animal products. Humans can be infected by contact with animals or by contact with animal by-products. Animal waste and veterinary pharmaceuticals impact our water supply. Both humans' and animals' health suffer when they encounter environmental impacts, such as polluted food, air, and water

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Mercury: Mercury is a powerful neurotoxin and is quite hazardous to humans, especially the young. Humans often receive mercury exposure from fish consumption. Mercury is very dense; it seeks the lowest point in bodies of water. It is naturally occurring in nature, but also is introduced to water by the settling of air emissions, pollution, and industrial and household dumping. Mercury in water eventually becomes methylmercury. Small fish nibble on the mercury at the body of the water's bed, and are then eaten by larger fish. More and more mercury is accumulated in the fatty tissue of each successive fish, until finally humans eat the larger fish. The ANA has championed removing mercury from health care, and also works to preserve and enhance the federal Clean Air Act by decreasing mercury emissions from coal-fired power plants.

Pharmaceutical waste: Humans and animals flush, excrete, and rinse waste pharmaceuticals into the Earth's water supply at a staggering rate. ANA recently released their position statement on this issue, which states that it supports pharmaceutical waste disposal practices that prevent drug dispersion and misuse, as well as prevent the release of drugs into the environment. Research on "greener" pharmaceuticals and improved wastewater filtration systems are key, as well as expanded education, advocacy, and legislation. Prescribing practices that decrease pharmaceutical waste, yet protect health, must also be carefully examined.

Non-therapeutic use of antibiotics: Nurses are concerned with the unnecessary additives given to livestock, such as non-therapeutic antibiotics. Meat and poultry producers often use antibiotics in animal feed to promote growth or as prophylaxis. This overuse of non-therapeutic antibiotics may very well lead to the loss of many antibiotics' efficacy. Thus, the ANA (via an ANA House of Delegates Resolution) advocates for meat/poultry producers and bulk purchasers of meat to phase out the non-

therapeutic use of medically important antibiotics, and advocates against the use of fluoroquinolones in poultry. Additionally, the ANA fully supports legislation, such as the Preservation of Antibiotics for Medical Treatment Act (H.R.965) to decrease the inappropriate use of antibiotics in agriculture.

The ANA recognizes the value of the One Health Initiative and appreciates the collaboration of its supporters. Animals and humans all share the same environment, and it is time for all health care professionals to work together to improve the health of all life on Earth.

Holly Carpenter is Senior Staff Specialist at the American Nurses Association's Center for Occupational and Environmental Health.

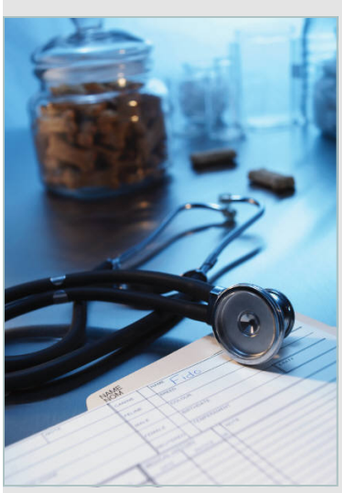
Editor's Note: For a further discussion of the judicious use of antibiotics, please see the Winter 2009 Newsletter—Volume 2, Issue 1, page 5.
http://www.doh.state.fl.us/Environment/medicine/One_Health/OHNLwinter09.pdf

Looking to the Future, AAVMC Board of Directors Approves NAVMEC Report –

"Roadmap for Veterinary Medical Education in the 21st Century: Responsive, Collaborative, Flexible"

The report emphasizes the need for groups involved in veterinary medical education, accreditation, and testing/licensure to work together to equip North American veterinary medical school graduates with the core knowledge, skills, and competencies required to meet society's evolving needs.

(Washington, D.C.) July 20, 2011 – On Sunday, July 17, the board of directors of the Association of American Veterinary Medical Colleges (AAVMC) approved a report by the North American Veterinary Medical Education Consortium (NAVMEC) on the future of veterinary medical education. The report, "Roadmap for Veterinary Medical Education in the 21st Century: Responsive, Collaborative, Flexible," emphasizes the need for groups involved in veterinary medical education, accreditation, and testing/licensure to work together to equip North American veterinary medical school graduates with the core knowledge, skills, and competencies required to meet society's evolving needs.



The report's five main goals are to: 1) graduate career-ready veterinarians who are proficient and have the confidence to use an agreed-upon set of core competencies; 2) ensure that admissions, curricula, accreditation, and testing/licensure are competency-driven; 3) share resources to ensure veterinary medical education is of the highest quality and maximally cost effective; 4) promote an economically viable education system for both colleges of veterinary medicine and veterinary students; and 5) stimulate a profession-wide focus on innovation, flexibility, and action.

Recommendations in the report describe core competencies in three main areas: 1) multi-species knowledge plus clinical competence in one or more species or disciplines; 2) "One Health" competency related to the intersection of animal, human, and environmental health; and 3) the development of professional competencies. Professional competencies include: communication; collaboration; management; lifelong learning related to scholarship and research; leadership; diversity and multi-cultural awareness; and the ability to adapt to changing environments.

The report, submitted by a nine-person NAVMEC board of directors, is the culmination of several years of work by NAVMEC, a consortium convened by the AAVMC that consists of a wide spectrum of stakeholders of veterinary medical education, accreditation, testing, and licensure. Participants included veterinary students,

employers of veterinarians, clinical practitioners, public practice employers, and leaders in veterinary medical education, global health, public health, public policy, the veterinary industry, animal care/welfare, and change management.

"We recognize that there are many ways to educate students to become veterinarians and that each college is unique and serves a unique constituency," said Dr. Willie M. Reed, immediate past-president of the AAVMC board of directors and dean of the Purdue University School of Veterinary Medicine, "but this effort will go a long way toward ensuring that academic veterinary medicine continues to evolve and adapt in order to remain relevant. With NAVMEC, academic veterinary medicine continues to be one step ahead of change."

The Association of American Veterinary Medical Colleges (AAVMC) is a non-profit membership organization working to protect and improve the health and welfare of animals, people and the environment by generating new knowledge and preparing the high quality veterinary workforce needed to meet continually changing societal demands for veterinary expertise. AAVMC provides leadership for and promotes excellence in academic veterinary medicine to prepare the veterinary workforce with the scientific knowledge and skills required to meet societal needs through the protection of animal health, the relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge.

On the Web: http://www.aavmc.org

The Association of American Veterinary Medical Colleges (AAVMC) is a non-profit membership organization working to protect and improve the health and welfare of animals, people, and the environment.

Meeting Summary: Consideration of an International Society for One Health (ISOH)

Prepared by Martyn Jeggo and John Mackenzie

Many meetings and discussions have taken place over the last decade on the concept and implementation of One Health and related activities. One example is the One Health Initiative (www.onehealthinitiative.com) managed by Bruce Kaplan, Laura Kahn, and Tom Monath. This has received more than 500 endorsements by science leaders and defines One Health as "the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals, plants, and our environment."

A number of international ministerial meetings have taken place with a focus on avian and pandemic influenza (IMCAPI) for example, at Sharm-el-Sheikh and Hanoi. WHO, FAO, OIE, UNICEF, the World Bank, and UNISIC have also cooperated to develop a joint strategic framework to address risks associated with emerging and re-emerging diseases. In parallel, there has been a key agreement between FAO, OIE, and WHO to work together on One Health, again with an initial focus on avian influenza/human pandemic influenza, but with an intention to move towards joint programs in other areas.

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The Public Health Agency of Canada hosted an invitation-only "One World, One Health" meeting in Winnipeg, Canada in 2009 to develop a series of actions that could be implemented at the national level. This was followed in 2010 by a similar meeting hosted by the CDC in Stone Mountain, USA. With a 3-5 year horizon, it identified seven key activity areas:

- Training
- One Health global network
- Information clearing house
- Needs assessment
- Capacity building
- Proof of concept
- Business plan development

The 1st International Congress on One Health provided a forum for scientific presentations on the impact of disease on humans, animals, and the environment, and also provided ample opportunity for discussion and debate on how this science can be used for policy development.

Working groups have been established under each activity area and are currently developing action plans for a range of undertakings.

In February 2011, the 1st International Congress on One Health was held in Melbourne, Australia. This meeting not only provided a forum for scientific presentations on the impact of disease on humans, animals, and the environment, but it also provided ample opportunity for discussion and debate on how this science can be used for policy development. Around 650 people attended the Congress and developed further a range of concepts around One Health. These include that it:

- Recognizes the interdependence and need to improve dialogue with respect to disease risks at the human, animal, and ecosystems interfaces
- Recognizes that communication, collaboration, and trust between human and animal health practitioners is key
- Has a broad vision that includes food safety/security, economics, and social behavior
- Needs to promote the 'doable' such as improving emerging infectious disease surveillance and response, and developing the broader approach
- Emphasizes community participation and an open dialogue
- Requires both 'ground-up 'and 'top-down' action

At the Congress, the idea of establishing an International Society for One Health (ISOH) was discussed. This received some support, but encountered a number of reservations. The focus was on research collaboration and coordination, on holding an international congress every two years, and on one or a limited number of targeted One Health journals. It was agreed to hold a meeting in London in June to discuss these ideas further.

At the Congress, the idea of establishing an International Society for One Health (ISOH) was discussed.

Subsequent to the Congress, considerable concern was expressed, particularly by the UN Agencies, CDC, and the European Union, about the formation of an ISOH. Therefore, the agenda for this meeting was modified to provide a more general debate on One Health needs that might include the formation of ISOH as an option, or possibly a loose One Health association as another option. Similarly, while the initial plan was to invite a restricted number of people to the meeting to assist the development of ISOH, a general invitation was subsequently offered for anyone wishing to attend the meeting.

For the complete meeting summary, please visit:
http://www.chathamhouse.org/sites/default/files/public/Research/Global%20Health/0611summary.pdf

Professor Martyn Jeggo is Director of CSIRO's Australian Animal Health Laboratory, and Professor John MacKenzie is previous Director of the Australian Cooperative Research Centre in Emerging Infectious Diseases and a Consultant to the World Health Organization.

Resolution from the Florida Medical Association House of Delegates, July 2011—

Collaboration between Human Medicine, Veterinary Medicine, and the Environmental Sciences (One Health)

Submitted by: Escambia County Medical Society

Whereas, The health of people, animals and their environments are interrelated; and

Whereas, Important psychosocial effects of the human-animal bond exist; and

Whereas, The majority of households include at least one animal; and

Whereas, The majority of emerging infectious diseases, including bioterrorist agents, are zoonoses, diseases affecting both people and animals; and

Whereas, By their very nature, the fields of human medicine, veterinary medicine, and the environmental sciences are complementary and synergistic in confronting, controlling, and preventing zoonotic diseases from infecting across species; and

Whereas, Many chronic health problems such as cancer, diabetes, and obesity are shared by people and their companion animals; and

Whereas, Environmental health hazards may be shared by people and animals including toxicants, allergens, and psychosocial issues; and

Whereas, Collaboration and communication among human medicine, veterinary medicine, and the environmental sciences has been limited in recent decades; and

Whereas, An initiative called “One Health” exists to improve the lives of all species through the integration of human medicine, veterinary medicine, and the environmental sciences; and

Whereas, “One Health”, aims to promote and implement close and meaningful collaboration/communication among human medicine, veterinary medicine, and environmental sciences professionals with the goals of improving the public’s health and the efficacy of disease care; and

Whereas, The challenges of the 21st Century demand that these professions work together; and therefore be it

RESOLVED, That our Florida Medical Association support the “One Health” initiative designed to promote collaboration among the health professions by improving the lives of all species through the integration of human medicine, veterinary medicine, and the environmental sciences; and be it further

RESOLVED, That our FMA engage in a dialogue with the Florida Veterinary Medical Association and the Florida Public Health Association to determine and implement strategies for enhancing collaboration among the human medical, veterinary medical, and environmental sciences professions in medical education, clinical care, public health, and biomedical research.

By their very nature, the fields of human medicine, veterinary medicine, and the environmental sciences are complementary and synergistic in confronting, controlling, and preventing zoonotic diseases from infecting across species.

The Florida Medical Association supports the “One Health” initiative designed to promote collaboration among the health professions.

One Health Newsletter

Continued.....

Coming Events:

Improving Food Safety Through One Health

Institute of Medicine/Forum on Microbial Threats

December 13 - 14, 2011
Washington, DC Map

http://www.iom.edu/Activities/PublicHealth/MicrobialThreats/2011-DEC-13.aspx

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11th International Colloquium on Paratuberculosis

International Association for Paratuberculosis

Sydney, Australia

February 5-10, 2012

http://www.icp2012.com.au/

GRF One Health Summit 2012

(GLOBAL RISK FORUM)

One Health - One Planet - One Future
Risks and Opportunities

Davos, Switzerland

February 19-23, 2012

http://www.grforum.org/pages_new.php/one-health/938/1/

Engaging Intergovernmental Organizations

Global Initiative for Food Systems Leadership

Geneva, Paris, and Rome

March 3-9, 2012

http://foodsystemsleadership.org/Programs/program.aspx?proID=3

One Health Newsletter

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Coming Events (continued):

International Conference on Emerging Infectious Diseases

ICEID 2012

Atlanta, Georgia, USA
March 12 -14, 2012

http://www.iceid.org/index.php/registration

15th International Congress on Infectious Diseases (ICID)

Bangkok, Thailand
June 13-16, 2012

http://www.isid.org/icid/index.shtml

13th ISVEE Conference, 2012

The International Society for Veterinary Epidemiology and Economics

"Building Bridges - Crossing Borders"

Maastricht, Netherlands

August 20-24, 2012

http://isvee13.org/

General Medical Library Association Meeting, 2013

Medical Library Association

"One Health: Information in an Interdependent World"

Boston, MA

May 3-8, 2013

http://mlanet.org/

One Health Newsletter

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Recent One Health Publications:

One Health—One Medicine: Unifying human and animal medicine within an evolutionary paradigm, Russell W. Currier, DVM, MPH and James H. Steele, DVM, MPH. Annals of the New York Academy of Sciences. 8 Aug 2011.

http://onlinelibrary.wiley.com/doi/10.1111/j.1749-6632.2011.06138.x/full

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Important Essay on the History of One Medicine: Contained within the Oxford Handbook of the History of Medicine. published in the United Kingdom (soon to be published in the United States).

http://ukcatalogue.oup.com/product/9780199546497.do

Environmental levels of the antiviral Oseltamivir induced development of resistance mutation H274Y in influenza A/H1N1 virus in mallards. Josef D. Jarhult, Shaman Muradrasoli, John Wahlgren, et al. PLoS ONE. 16 Aug 2011.

http://www.plosone.org/article/info:doi/10.1371/journal.pone.0024742

Catalog of One Health Activities and Programs, September 2011. Global Initiative for Food Systems Leadership. University of Minnesota.

http://www.onehealthinitiative.com/publications/One%20Health%20Catalog.pdf

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Toxicology, Environmental Health, and the "One Health" Concept. DE Buttke. Journal of Medical Toxicology. 5 Aug 2011.

http://www.springerlink.com/content/q236182844700211/

Operationalizing "One Health": A Policy Perspective-Taking Stock and Shaping an Implementation Roadmap, Meeting Overview, May 4-6, 2010, Stone Mountain, GA. Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases, Division of High Consequence Pathogens and Pathology.

http://www.oie.int/fileadmin/Home/eng/Media_Center/docs/pdf/meeting-overview.pdf

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Recent One Health Publications (continued):

Progress towards the eradication of Tsetse from the Loos islands, Guinea. Moise S. Kagbadouno, Mamadou Camara, Jeremy Bouyer, et al. Parasites and Vectors. Volume 4 (18), 10 Feb 2011

http://www.parasitesandvectors.com/content/4/1/18

Vital Signs: Incidence and Trends of Infection with Pathogens Transmitted Commonly through Food—Food-borne Diseases Active Surveillance Network, 10 U.S. Sites, 1996-2010. Morbidity and Mortality Weekly Report. 60 (22). 10 Jun 2011

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6022a5.htm

Respiratory Virus Report—Summer 2011: Emerging "One Health" Principles." International Society for Influenza and other Respiratory Virus Diseases (ISIRV)

http://www.onehealthinitiative.com/publications/isirv_Respiratory_Virus_Rep_Summer_2011.pdf

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One Health Principles Needed for Ageing Research in Humans and Animals. Dennis F. Lawler, DVM. Veterinaria Italiana Journal 2011. Volume 47 (3), July-September.

http://www.izs.it/vet_italiana/2011/47_3/47_3.htm

For other One Health publications, please visit the One Health Initiative website:

http://www.onehealthinitiative.com/publications.php