

One Health Newsletter



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The One Health Newsletter is a collaborative effort by a diverse group of scientists and health professionals committed to promoting One Health.

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

Practicing One Health for the Human Health Clinician

Bruce Kaplan, DVM, Dipl. AVES (Hon)

The following One-pager by the One Health Initiative autonomous, *pro bono* team (and a Yale Medical School collaborator) is a seminal One Health contribution for busy human health care providers (physicians, osteopaths, nurses, and others). It succinctly provides a roadmap for understanding and appreciating the critical need for adopting and implementing a practical, hands-on One Health approach as a human clinical health care modality tool.

The One-pager captures the true spirit of One Health by advising human health care practitioners to participate in multidisciplinary/interdisciplinary collaborations utilizing veterinary medical expertise and others in order to provide enhanced, expeditious, and better quality health care for people—both adults and children—worldwide. The American Medical Association (2007), the American Academy of Pediatrics (2008), and the American Nurses Association (2010) have all endorsed One Health.

One Health Newsletter readers are urged to distribute this paper to all collaborative human health care providers and One Health advocates. This will help inform professionals about the distinct human health benefits that could be derived from a patient care multidisciplinary/interdisciplinary approach. A PDF of the One pager is available at: <http://www.onehealthinitiative.com/publications/Practicing%20One%20Health%20Human%20Health%20Care%20Providers%20April%202012.pdf>.



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Practicing “One Health” for the Human Health Clinician

(Physicians, Osteopaths, Physician Associates, Nurse Practitioners, Other Human Health Care Providers)

What is One Health Practice?

The One Health clinical concept recognizes that the health care of humans and animals in a community benefits when there is collaboration and communication between human and animal health professionals.

Why should human and animal health care professionals collaborate?

More than 50% of households include at least one pet, and this percentage may be growing.

- Zoonotic infections: Animal contact can pose a risk of zoonotic infectious disease, and this risk increases if there are infants, elderly, or immunocompromised individuals in the household. Veterinarians are a source of expertise regarding zoonotic diseases; disease control in animals can help limit the patient’s exposure to infectious pathogens.
- Animal allergies: If humans are developing allergies to animals in the household, a consultation with a veterinarian may help identify alternatives to getting rid of the pet
- Human animal bond: humans can develop deep bonds with animals, and this can have therapeutic value and implications for medical care. For example, people may change their behavior for the better (such as tobacco cessation) if they recognize that such changes will also benefit their pets.
- Animals as sentinels: like the “canary in the coalmine,” animals may show signs of exposure to a toxic or infectious hazard in the environment before humans, providing an “early warning” of environmental risk. Communication between human health care providers and veterinarians is necessary to share such information.

What are some potential benefits of a One Health Approach?

1. Improved diagnosis and prevention of infectious diseases transmitted between animals and people
2. Improved management of animal allergies
3. Improved psychosocial status of patients
4. Early detection of environmental health hazards
5. Improved patient satisfaction

What changes in practice are necessary?

The One Health approach can involve very simple and manageable changes in clinical practice.

1. Take a history of animal contact for your patients.

The One-pager captures the true spirit of One Health by advising human health care practitioners to participate in multidisciplinary/interdisciplinary collaborations.



Dr. Bruce Kaplan



Approximately 23.5 million asthmatics live in the United States and in some U.S. regions, as much as half the horse population is afflicted by a breathing disorder.

2. Consider consulting with a veterinarian on cases related to animal contact.
3. Encourage your patient to have their veterinarian contact you with questions about health issues that overlap between humans and animals.
4. Set up a meeting between local veterinarians and human health care providers to discuss possible cross-referrals and other collaborations.

References and website resources:

Human-Animal Medicine – Clinical Approaches to Zoonoses, Toxicants and other Shared Health Risks

<http://www.us.elsevierhealth.com/product.jsp?isbn=9781416068372> – 1st Edition (2010)

Handbook For Zoonotic Diseases of Companion Animals -

<http://www.cfsph.iastate.edu/Products/handbook-for-zoonoticdiseases-of-companion-animals.php>

1st Edition (2008)

CDC Healthy Pets Healthy People - <http://www.cdc.gov/healthypets/>

One Health Initiative website - www.onehealthinitiative.com

Canary Database - <http://canarydatabase.org/>

Dr. Bruce Kaplan is a member of the One Health Initiative Autonomous pro bono Team along with Laura H. Kahn, MD, MPH, MPP, Thomas P. Monath, MD, Jack Woodall, PhD, and Lisa A. Conti, DVM, MPH. This One-pager was produced by the team with assistance from Peter M. Rabinowitz, MD, MPH.

Physicians, veterinarians partner to help people, horses to breathe easy

[Reprinted with permission from Virginia Tech Research Magazine:

<http://www.research.vt.edu/resmag/2011winter/asthma.html>]

Susan A. Steeves

The laughing young girl kicking the beach ball wouldn't seem to have much in common with the middle-aged horse languidly munching grass in the pasture. But they both suffer from inflamed and obstructed airways, known in people as asthma and in horses as heaves and inflammatory airway disease. They are part of an unlikely grouping — a children's doctor, a veterinarian, the 8-year-old girl, and the 20-year-old horse. It's the type of relationship that will drive collaborations slated to be the hallmark of the new Virginia Tech Carilion School of Medicine and Research Institute.



Dr. Andy Muelanaer, pediatric pulmonologist talks about dealing with childhood asthma. Photo by Kelsey Kradel.

Breathing disorders that affect both humans and equines are serious. Approximately 23.5 million asthmatics live in the United States and, in some U.S. regions, as much as half the horse population is afflicted by one of the breathing disorders.

“Our number one goal is to allow a child [with asthma] to participate in normal activity.”

Asthma is a chronic disease that can be triggered when something, such as pollen, pet dander, dust, or exercise, sets off an immune response causing the bronchial tubes to become inflamed and constricted.

The doctor and the 8-year-old girl

Dr. Andy Muelenaer, a Virginia Tech Carilion School of Medicine pediatric pulmonologist, was steered toward his career when he was a Virginia Tech biology undergraduate working on one of the first membrane oxygenators for infants in a biomedical engineering laboratory. Under the tutelage of Leon Arp, a Virginia Tech engineering professor at the time, Muelenaer did work that morphed into a device to help premature infants receive the oxygen they lack because their lungs are not fully formed. Muelenaer worked with bovines and rabbits to prove the worth of the device. In the process, he earned his master’s degree in zoology and decided to go to medical school to become a neonatologist, a doctor who cares for critically ill premature babies. Eventually, Muelenaer decided he didn’t want to do critical care, but loved the gadgets. “Pulmonology offered the best of both — dealing with respiratory problems and plenty of technology,” he says.

In his role as a clinical doctor and chief of the Section of Pediatric Pulmonology/Allergy at the Carilion Clinic Children’s Hospital in Roanoke, he works with youngsters afflicted with breathing problems, most notably asthma.

“Our number one goal is to allow a child to participate in normal activity,” Muelenaer says. Eight-year-old Summer Wagner is the embodiment of successful treatment of asthma as she runs, jumps, kicks a ball, and hits golf balls, all the while laughing. She was born with asthma. So was her 12-year-old brother Luke. They are part of a three-day summer camp for children with asthma — Catch UR Breath Camp, sponsored by the Carilion Clinic Children’s Hospital and several other medical institutions and businesses.

“Sometimes dust or heat, the weather, make my asthma start,” explains Summer, who says one of her favorite things is doing hula hoop. “I take my inhaler before I do activities.”



Luke Wagner and another camper play a game as part of a summer camp for children with asthma. Photo by Jim Stroup.

Asthma is a chronic disease that can be triggered when something, such as pollen, cat or dog dander, dust, or exercise, sets off an immune response causing the bronchial tubes to become inflamed and constricted. Mucus in these airways thickens and builds up and the muscles around the airways tighten. The signs are coughing, wheezing, a tight chest, and shortness of breath.

Summer and Luke have come to the camp for the past three years. This year Luke is over the age to be a camper but he did so well in



Dashaun Grogan runs in a team relay game as part of a three-day summer camp for children with asthma. Photo by Jim Stroup.

At a camp for children with asthma, youngsters learn more about what asthma is, how to manage it, and how important it is to follow the management program they've been given by their doctor.

previous years that he was asked to be a junior counselor at the camp.

Aside from all his academic and clinical knowledge, Muelenaer can relate to the youngsters who come to the camp and the clinic; he has exercise-triggered asthma and one of his children also has asthma. So, he knows how important it is to diagnose the type of asthma children have and put them on the right treatments. Asthma can be of four levels: intermittent (generally exercise-induced), mild persistent, moderate persistent, and severe.

Using state-of-the-art equipment, Muelenaer and his respiratory therapists evaluate children who haven't had their breathing problems diagnosed and also see youngsters who have been coming to the clinic for years. Some of his patients have gone on to stellar careers in college and professional sports and even competed in the Olympic trials. About 10 percent of Olympic athletes are asthmatic, Muelenaer says.

"Education is as important as diagnosis and treatment," Muelenaer emphasizes. The clinic team educates parents and youngsters when they come in for evaluation or a checkup; education also is one of the most important aspects of Catch UR Breath Camp. The youngsters learn more about what asthma is, how to manage it, and how important it is to follow the management program they've been given by their doctor.



Dr. Andy Muelenaer, pediatric pulmonologist, sits with a patient during his asthma treatment at Carilion Clinic Children's Hospital. Photo by Kelsey Kradel.

"Once we established treatment protocols in the mid-90s, admissions to the hospital for asthma went way down," Muelenaer says. "We got smarter about how we treated asthma, and new medications also made a difference." Despite improvement in treatment and management of the disease, the most recent statistics from the Centers for Disease Control and Prevention (CDC) are that asthma accounts for 1.1 million hospital non-emergency outpatient visits, 1.6 million emergency department visits, and 440,000 hospitalizations in the United States each year. Approximately 4,000 people die annually.

Most asthma begins at birth or in childhood with about 9.5 percent of American children currently diagnosed with the disease — about 7 million, according to the CDC. But the disorder also can develop and/or worsen in adulthood.

There is currently no cure for asthma, though it can be treated so that most people can perform normal activities.

“Horses are superb models for studying airway diseases because they develop these illnesses spontaneously, like humans.”

The veterinarian and the 20-year-old horse

Although asthma can be treated so that most people can do the activities they love, why asthma happens is unknown, and there is no cure. That’s where the veterinarian and the 20-year-old horse become part of the picture.



Dr. Virginia Buechner-Maxwell at the Virginia-Maryland Regional College of Veterinary Medicine, is conducting an investigation of human asthma and related equine disorders of heaves and inflammatory airway disease.

Immune systems in horses and people react to certain triggers that cause airway inflammation and tightening of the associated muscles. Some of the triggers are even the same — dust, debris from mites, weather. But why the immune system reacts the way it does in some people and some horses is unknown. Apparently some genetic factors, combined with exposure to certain environmental factors, result in human asthma and equine inflammatory airway disease and

heaves, also called recurrent airway obstruction. Dr. Virginia Buechner-Maxwell is investigating what causes the diseases and how to prevent long-term damage from the diseases and the treatments. The goal is better treatments or cures.

“Horses are superb models for studying airway diseases because they develop these illnesses spontaneously, like humans,” explains Buechner-Maxwell, a professor of large animal internal medicine in the Virginia-Maryland Regional College of Veterinary Medicine at Virginia Tech. “They also are the only animals besides people that experience chronic changes of the disease as they age.”

Buechner-Maxwell first learned about the human and the equine forms of breathing disorders when she was very young. Her mother had severe asthma and her first horse was heavy. But her interest in the science was sparked when she was studying for a master’s degree at the University of Pennsylvania and she attended seminars given by their immunology group, which was investigating regulation of the immune response.

“As my understanding of the immune system grew,” she recalls, “I became specifically interested in understanding the events that direct and regulate the immune response because it seems to me that a responsive, well-regulated immune system is critical to good health.”

Asthma and heaves often are the immune system’s response to an allergy, especially to airborne particles. “Allergies in general are a good example of what happens when the immune response is disproportionately intense relative

Buechner-Maxwell at the Virginia-Maryland Regional College of Veterinary Medicine is studying the reasons for inflammation of the airways, how the treatments affect the immune response, and the long-term disease/treatment ramifications.



Photo by John McCormick.

to the inciting cause," says Buechner-Maxwell.

She is studying both the reasons for the inflammation of the airways and the changes associated with it, how the treatments affect the immune response, and the long-term disease/treatment ramifications.

Heaves in horses is much like asthma in adult humans, especially older people, because they may have worsening disease and long-term lung damage from the disease. Inflammatory airway disease in horses is more like pediatric asthma. In either case, horses and people can be treated the same ways — by keeping them away from the triggers as much as possible and taking some of the same drugs. Horses have even been fitted with surgical mask-type devices so that they can inhale the medication just like people.



Dr. Buechner-Maxwell fits Jangles, a mare that suffers from heaves, the equine version of asthma, with an inhalation mask, which works the same way a nebulizer does for people. Photo by John McCormick.

Inhaled corticosteroids to minimize inflammation and bronchodilators to open constricted airways are the standard medication now for long-term control of asthma to relieve inflammation. One bronchodilator that is used is albuterol, a beta2-agonist that provides fast-acting relief of airway constriction and often is taken through an inhaler before participating in sports. New research in human medicine suggests that this medication also may influence the nature of the body's inflammatory response associated with asthma, says Buechner-Maxwell. She is studying the receptor that binds with beta2-agonists to determine whether these drugs affect inflammatory response in heavy horses as well. Specifically, she is investigating if albuterol affects the types of cytokines that immune cells produce after exposure to an allergen or irritant. Cytokines are small proteins that signal cells to react in different ways. In the case of asthma or heaves, the cytokines produced by immune cells following allergen exposure differ from those that normal people and horses synthesize. Ultimately, these cytokines signal events that result in airway inflammation experienced by affected horses and humans.

The kind of scientific investigation Buechner-Maxwell does is called translational research because the information obtained from studying heavy horses is analogous to what human asthmatics experience. Since horses with heaves or

Horses age faster than humans, so immune response, drug effects, and long-term disease progression can be studied faster than in human patients.



Susan Steeves

inflammatory lung disease develop the disease spontaneously, the species is a more comparable model with humans than a mouse, a rat, or some other organism engineered to simulate suffering from asthma-like disease.

Horse use as a model for asthma is also important because cell samples can be taken for testing of the immune response without harming the horse. In addition, horses age faster than humans so results of immune responses, drug effects, and long-term disease progression can be studied faster than in human patients. This is an especially important factor when one of the research goals is to better understand chronic lung and bronchial tube changes that occur in people and animals with life-long airway disease.

The research on cytokine expression is ongoing by Buechner-Maxwell and her research team. Currently, they know that some of the signaling that stimulates cytokine response is different in heavy horses' lymphocytes, a type of immune cell, when compared to the lymphocytes from a horse not plagued by the disease.

"My hope is that by better understanding the events that lead to the 'inappropriate' response of the immune system in diseases like heaves and asthma, more can be learned about what promotes and maintains the normal immune response," Buechner-Maxwell says. While she works on the disease from both the practical equine side and the molecular research side, Muelenaer has collaborations back where his interest first peaked — Virginia Tech's mechanical and biomedical engineering departments.

"We currently have five projects related to pediatrics: a pediatric electronic device for emergency resuscitation, an automated oxygen delivery control system, a tracheostomy airflow sensor, a wireless sensor for monitoring and predicting cerebral palsy in infants, and a monitoring system for preterm infants when they're being transported to medical facilities," Muelenaer says.

What people with asthma and horses with breathing disorders share is the hope of a better future, thanks to research and collaboration by physicians and veterinarians.

Susan A. Steeves is Media Relations Manager in the Office of University Relations at Virginia Tech., acting as liaison between the university and the media in coordinating interviews for radio, television, print, and Internet news operations.



Sea Grant, veterinarians join forces to raise awareness on medicine disposal

[Adapted from a National Sea Grant press release by Mary Echols, DVM]

Parents take great care to keep medicine out of the reach of children, and now pet owners are being urged to keep household medications out of the reach of their four-legged friends and dispose of expired medicines properly.

The National Sea Grant Office (NSGO), part of the National Oceanic and Atmospheric Administration, and the American Veterinary Medical Association (AVMA) have formed a three-year partnership to raise awareness among veterinary clients about the importance of proper storage and disposal of unused veterinary medications. Their intent is to curb improper disposal of unused drugs, which are a risk to people, animals, and the environment.

Over the past six years, the NSGO has developed campaigns to educate people on proper disposal of unused and out-of-date medications and worked with communities to develop local medicine collection programs. By partnering with the AVMA, the expectation is the information campaign will reach new audiences, including animal owners who, along with many in the general public, may need to dispose of unused and expired medicine. The aim is to prevent pet poisonings and to protect rivers, streams, lakes and groundwater.

According to the Animal Poison Control Center of the ASPCA, human medications topped the list of pet toxins in 2010. Nearly 25 percent of calls they received for pet poisonings resulted from pets consuming human medications. Over-the-counter drugs, such as acetaminophen and ibuprofen, along with prescription antidepressants and ADHD drugs were among the most common causes of pet poisonings.



Pets, of course, are not the only victims of accidental poisonings. The Journal of Pediatrics recently reported that between the years 2001-2008, more than 430,000 children age five or younger were brought to emergency rooms due to self-ingested medicines.

What's more, pharmaceuticals are turning up in the environment. Studies have identified a wide range of pharmaceutical chemicals in rivers, streams, groundwater, the Great Lakes, and drinking water nationwide.



“Medicine disposal has become an emerging issue,” said Laura Kammin, Illinois-Indiana Sea Grant pollution prevention specialist. “The long term impact is not known, but it’s clear that flushing medicines or throwing them in the trash can contribute to the problem.”

“By increasing the general public’s awareness of options available to them for the proper disposal of pharmaceuticals and the environmental consequences of improper disposal, it is hoped and anticipated that fewer and fewer medications will be flushed or poured into our waters,” said Kristi Henderson, AVMA assistant director of scientific activities.

“We are excited about this collaborative effort between the AVMA and NOAA’s National Sea Grant College Program,” said Mike Liffmann, Extension Leader for the National Sea Grant Office. This is an important step towards “ensuring that leftover or unused medications for animals are disposed of properly so they cannot harm people, the animals, or the environment.”

For more information about medicine collection programs, visit

<http://www.unwantedmeds.org/>

Sea Grant: <http://www.iiseagrant.org/gros/meddisposal.html>

AVMA: http://www.avma.org/issues/policy/pharmaceutical_disposal.asp

Sea Grant is a nationwide network of 32 university-based programs that work with coastal communities. The National Sea Grant College Program engages this network of the nation’s top universities in conducting scientific research, education, training, and extension projects designed to foster science-based decisions about the use and conservation of our aquatic resources.

Building Support for Protected Areas Using a “One Health” Perspective

Steve Osofsky, DVM

An excerpt from: Osofsky, S. A., Kock, R. A., Kock, M. D., Kalema-Zikusoka, G., Grahn, R., Leyland, T., and W. B. Karesh. 2005. “Building Support for Protected Areas Using a ‘One Health’ Perspective,” pp. 65-79, in McNeely, J. A. (ed.) Friends for Life: New Partners in Support of Protected Areas. IUCN, Gland, Switzerland and Cambridge, United Kingdom.

Throughout the world, domestic and wild animals are coming into ever more intimate contact. Without adequate scientific knowledge and planning, the consequences can be detrimental on one or both sides of the proverbial fence. But with the right mix of expertise armed with the tools that the animal health

Many of the diseases of concern to conservation are essentially invasive alien species, and are either already negatively affecting biodiversity or have the potential to do so.

A “One Health” approach is not about interfering with nature—it is about trying to help systems already perturbed by pathogens to re-establish a state wherein disease does not threaten vital conservation and development objectives.

sciences provide, conservation and development objectives have a much greater chance of being realized, particularly at the critical wildlife/livestock interface where conservation and agricultural interests meet head-on.

Impacts from interactions between livestock, wildlife and people (and habitat) are profound in many parts of the world. The issues at this interface represent an unfortunately all-too-often neglected sector of critical importance to the long-term ecological and socio-political security of protected areas and grazing lands worldwide. Whether the issue is the ongoing bovine tuberculosis crisis in and around South Africa’s Kruger National Park, or Yellowstone National Park’s ongoing brucellosis saga costing U.S. authorities millions of dollars to manage, these issues merit more proactive attention than they have received to date. It is important to note that many of the diseases of concern to conservation are essentially invasive alien species, and are either already negatively affecting biodiversity or have the potential to do so.



As people and their domestic animals penetrate once pristine areas and expand their range and intensity of activities, the risk of transmitting serious diseases to wildlife increases significantly. Diseases of people, domestic animals and wildlife are now being recognized as an increasing challenge to biodiversity conservation, as well as to efforts to improve the quality of life for people. Although endemic (i.e., native) wildlife diseases play important ecological roles, human activities in many cases have disrupted ecosystems, leading to both gradual and catastrophic losses of wildlife populations. A “One Health” approach is not about interfering with nature – it is about trying to help systems already perturbed by pathogens that may or may not “belong” within them to re-establish a state wherein disease does not threaten vital conservation and development objectives. Many factors affecting health and the basic epidemiology of multi-host diseases are still poorly understood, and conservation and wildlife management decisions are often made without complete information. The critical edge – where the health of wildlife, domestic animals, and people meld together and are best addressed as “One Health” – exists at the borders of most protected areas of the world.



Improvements to classic disease control methods require “out of the box” thinking by veterinary and animal health authorities, including the promotion and legalization of community-based animal health systems.



The “One Health” paradigm and protected areas

In balancing the needs and expectations of Africa’s rural inhabitants with those of wildlife conservationists, including protected area managers, it is necessary to consider how disease interactions influence human, livestock, and wildlife health (WCS, FVP, 2003a, 2003b; Kalema-Zikusoka, 2005; Kock, 2005b; Bengis, 2005) while keeping in mind that the role of wildlife health in conservation goes beyond the presence or absence of disease (Mainka, 2001; Deem et al., 2001). Wildlife health, in the broadest sense, is a holistic concept with a focus on populations and the environments in which they live. This focus must of course include human populations and livelihood needs, especially at the wildlife- livestock interface. While some caution is merited to prevent making too simplistic a linkage between “ecosystem health” and “human health,” potentially at the expense of wildlife and conservation funding (Osofsky et al., 2000), it is clear that a paradigm shift in Africa is needed. Health is the key linkage that can contribute to human well-being and, therefore, serve as a logical entry point to promote environmental stewardship and healthy ecosystems (Margoluis et al., 2001).

In many instances, both historically and currently in Africa (Kock et al., 2002), disease control methods that have been adopted by veterinary and health authorities have been drastic, have had a significant negative impact on ecosystem health and biodiversity, and have rarely considered the broader issues surrounding and influencing health. Classic disease control methods include vaccination, test and slaughter, blanket slaughter, vector control, and movement controls including fencing. Many of these require “out-of-the-box” thinking by traditional veterinary and animal health authorities, including the promotion and legalization of community-based animal health systems. The indiscriminate use of fencing to control disease transmission between livestock and wildlife without considering connectivity and vital linkages between ecosystems is an example of a cause for concern (Albertson, 1998; Keene-Young, 1999; Scott Wilson and EDG, 2000; Thomson et al., 2003; Kock et al., 2002; Martin, 2005).

Historically, African protected areas have been managed without due concern for the communities that live nearby. This “hard edge” approach has done little to foster support for conservation and environmental issues and this legacy can be seen in the lukewarm response that the wildlife industry receives from politicians and other decision makers in many parts of postcolonial Africa (Kock, 2005a). In southern Africa, the adoption of community-based approaches to resource management, such as CAMPFIRE (Communal Areas Management Program For Indigenous Resources) in Zimbabwe, softened the hard edge and allowed communities to benefit from protected areas, be they national parks, game reserves, safari areas, or private conservation initiatives (Child, 1995). Other Community-Based Natural Resource Management (CBNRM) programmes con-

Benefits of Community Based Natural Resource Management programs for pastoralist communities include managed cropping of bush meat, increased revenues from tourism, and access to grazing and water resources.



Disease outbreaks can trigger conflict, and historically, politics have dictated that interventions by public health and agriculturally oriented veterinary services take priority, which usually has negative impacts on the wildlife resource.

tinue to be developed and evaluated in East and southern Africa (Murphree, 2000; DFID, 2002; Weaver and Skyer, 2005; Murphree, 2005; Lewis, 2005) including the DFID-funded Mpomiba project with 19 villages close to the Ruaha National Park in Tanzania and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)-funded project with forty villages adjacent to the Selous Game Reserve. In Namibia, the National Community Wildlife Conservancy Programme has led to the registration of significant numbers of community- owned conservancies, many of which have entered into joint ventures with the private sector.

In general, pastoralist communities are likely to perceive the main CBNRM benefits to be the managed and more sustainable cropping of bush meat; increased revenues gained from consumptive tourism (hunting) and nonconsumptive tourism (wildlife viewing), or enterprise and employment opportunities in the tourism sector; as well as access to grazing and water resources for their own animals. Indirect gains come from investments in wildlife- related tourism, which lead to improved infrastructure such as roads, water mains, electricity and communications.

To ensure that these protected areas are able to provide the resource base for these benefits to communities, addressing disease issues should be an integral part of protected area planning and management and should involve veterinary and other health authorities. This is crucial as the impact of emerging and resurging diseases on the health of people, their livestock, and wildlife is likely to constrain the maintenance and development of protected areas and compromise conservation initiatives into the future. The potential for spread of bovine tuberculosis from Kruger National Park to surrounding human communities (Michel, 2005) is a case in point. In the 21st century, management of protected areas needs to go beyond just concern for improved relationships with communities through benefits such as cash returns related to CBNRM. It must consider the health of the overall ecosystem, including people, their livestock, and the flora and fauna that are part of the larger community.

Conclusions

Disease is becoming an important issue in conflicts between protected area authorities and adjacent communities. These frequently poor communities increasingly perceive wildlife negatively, especially where they have no stake in the management or use of that wildlife resource. Under these circumstances disease outbreaks can trigger conflict, and historically, politics have dictated that interventions by public health and (agriculturally oriented) state veterinary services take priority: this usually has negative impacts on the wildlife resource. On the other hand, those same poor communities and livestock are seen as a threat to many protected areas as they compete with wildlife for resources and also

To reduce conflict and the risks and impacts of disease, a “One Health” approach is required.

The AHEAD (Animal Health for the Environment and Development) Initiative focuses on several themes of critical importance to the future of livestock, wildlife, and people.

because of a history of disease introductions. This situation is counterproductive for all concerned and cannot lead to better decisions being made for healthier ecosystems or human environments.

To reduce this conflict, as well as the risks and impacts of disease, in particular at the interface between wildlife and livestock but also at the interface with people, a “One Health” approach is required. Public education, training and awareness-raising regarding human, domestic animal, and wildlife health issues are crucial. In addition, more research on land-use and disease management at the interface is needed, as are new philosophies, attitudes, and approaches to livelihoods and resource use. New practical measures, such as multiple-use diagnostic centres, should be introduced in order to improve both animal and human health. This will be beneficial to community development and biodiversity conservation alike.

By raising the profile of the management, development, and research implications of the impacts of infectious diseases on the ecological and socio-political security of protected areas, especially in (but not by any means limited to) Africa, this chapter has sought to sensitize the reader to the critical importance of these issues. As socio-economic progress demands sustained improvements in health for people, their domestic animals, and the environment, the value of moving towards a “One Health” perspective is hopefully clear.



The AHEAD Initiative

The AHEAD (Animal Health for the Environment And Development) initiative, led by the Wildlife Conservation Society and partners, focuses on several themes of critical importance to the future of livestock, wildlife, and, of course, people: competition over grazing and water resources; disease mitigation; local and global food security; zoonoses (diseases transmitted between animals and people); and other potential sources of conflict related to the overall challenges of land-use planning and the pervasive reality of resource constraints. Prior to this initiative, neither non-governmental organizations, nor aid agencies, nor academia have holistically addressed the landscape-level nexus represented by the



Steven Osofsky
Photo courtesy of WCS

To take care of pets in a natural disaster or other emergency, it is important to make a plan, be ready, prepare for the worst, and hope for the best.



wildlife health/domestic animal health/human health triangle, especially as it relates to protected areas. www.wcs-ahead.org

References available at: http://myfloridaeh.com/medicine/One_Health/OHN_Osofsky_References.pdf

Steven Osofsky, DVM, joined the WCS Field Veterinary Program in December 2002 and is currently WCS' Director of Wildlife Health Policy. He is also an adjunct assistant professor at the University of Maryland, College Park, and has served on eight IUCN SSC Specialist Groups.

Saving Fido, Fluffy, and Nickers

Kendra Stauffer, DVM, DACVPM

In my position as Area Emergency Coordinator for Florida with Veterinary Services (USDA), I am often asked exactly what folks should do to prepare their families including their beloved pets, for a natural disaster or other such emergency. Just the fact that they are asking that question is the first and most important step. They realize that their family and their pets are their responsibility. There is a saying in emergency management that all disasters start locally and end locally. That is very true. If an event can be predicted, such as a hurricane, preparations start occurring locally. Property is battened down, shored up, and evacuated if need be. Local emergency managers distribute information through media outlets and offer guidance to residents. Long after the disaster is over and all of the outside agencies and groups have gone back to where they came from, the community at the local level is still recovering. All of this occurs because people make plans.



Make a plan, be ready, prepare for the worst, and hope for the best. To get where you are going, you need a plan to get you there. There are several great sites that offer what you need to think about before a disaster and are listed in the references.

Start with a Plan:

- Set up an appointment to talk to your veterinarian or livestock extension agent about disaster planning
- Assemble an animal evacuation kit (including but not limited to food/feed, water, medications, bowls, leashes/collars/harnesses, crates, first aid kits,



redundant animal identification, veterinary records, important contact lists, cash, etc. enough for 7-10 days)

- Keep vehicles, trailers, haulers and all equipment in good working condition
- Develop an evacuation plan for ALL of your animals and PRACTICE the plan
- If evacuation is not an option (such as for livestock), have well maintained backup generators and fuel, good barn and field maintenance, assess stability and safety of barns and out buildings, go through the “what if” scenario in your head
- Think about resources that you already have access to such as family members or friends in another area, livestock producers in an adjacent unaffected county, local extension agents, listservs that you may be a part of, etc.
- Be situationally aware. Know your environment. Does your property flood easily, do you have lots of old large trees on your property, are there multiple access roads to your property or community, where is the safest place in your house or your property if evacuation is not an option?

Practice the Plan:

- Set up a practice run of your plan before a disaster occurs. Does the whole family know about the plan and their part in the plan? Was the stockpile of water there where it should have been or did it get used during your last family camping vacation? You are not going to know exactly when a disaster is going to occur, but you can be smart about practicing your plan. Certain areas of the country have “disaster seasons” such as hurricane or tornado seasons. Practice a month or two before the start of these seasons and make sure all of your checklists are indeed “checked”
- Evaluate the execution of the plan. What worked well, what didn’t, where are improvements needed?
- Update the plan based on execution and evaluation.
- Communicate these changes to all persons involved with the plan.

After the disaster:

- Survey the area inside and outside your home to identify sharp objects, dangerous materials, dangerous wildlife, contaminated water, downed power lines, or other hazards.
- Examine your animals closely, and contact your veterinarian immediately if you observe injuries or signs of illness.
- Recognize that familiar scents and landmarks may have changed, and this can confuse your animals.
- Release equine/livestock in safe and enclosed areas only. Initial release should take place during daylight hours, when the animals can be closely observed.
- Release cats, dogs, and other small animals indoors only. They could encoun-

Training on disaster response and preparation may be available in your area through the Community Emergency Response Team (CERT).



People can become infected with food-borne illnesses from handling infected food or their ill pets.

ter dangerous wildlife and debris if they are allowed outside unsupervised and unrestrained.

This article is not meant to be all inclusive, but to get you thinking about your plan if you don't already have one, or possibly to make your plan better if you already do. Remember, at the end of a disaster, no home owner or family member ever complains that they spent an extra \$40 on water, plywood, or pet food that they didn't have to use! Make a plan, be ready, prepare for the worst and here is wishing you an uneventful "disaster season."

Training:

Training may be available in your area through The Community Emergency Response Team (CERT) Program (CERT educates people about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations.) Access at <http://www.citizencorps.gov/cert/> The Florida specific group – Florida State Agriculture Response Team (FLSART) is a multi-agency coordination group consisting of governmental and private entities dedicated to strengthening all-hazard disaster capabilities through partnerships. Florida SART will support an effective and coordinated incident response for the animal and agricultural sectors in the State of Florida. FLSART provides training in different emergency topics which can be accessed through their training calendar at <http://www.flkart.org/>.

References:

AVMA Saving the Whole Family at https://ebusiness.avma.org/ebusiness50/files/productdownloads/saving_family_brochure.pdf

FEMA information for Pet Owners at <http://www.fema.gov/plan/prepare/animals.shtm>

USDA Emergency and Disaster Preparedness website at <http://awic.nal.usda.gov/companion-animals/emergencies-and-disaster-planning>

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Pet food and human disease

Lisa Conti, DVM, MPH, DACVPM

When a sample of Diamond pet food recently grew *Salmonella infantis* during a routine inspection, the resulting pet food recall did not occur quickly enough to prevent human cases in more than a dozen states. People became infected from handling the food or their ill pets.

Animal cases of food-borne illness can be sentinels for human disease and therefore the One Health community should take heed when pet food contamination is identified.

This highlights the close relationship we have with our companion animals as well as the need to handle pet food and treats with caution. We have multiple examples of human and companion animal illness from pet food and treats. Feeding pets in the kitchen increases the likelihood of human infection due to cross contamination.

Pathogens or chemicals, as in the melamine situation of 2007, contaminate pet food. Animal cases can be sentinels for human disease and therefore the One Health community should take heed when pet food contamination is identified.

Several sites have information for recalls and safety tips for consumers, including:

- Food and Drug Administration Recalls and Safety Alerts:

<http://www.fda.gov/animalveterinary/safetyhealth/recallswithdrawals/default.htm>

- American Veterinary Medical Association Pet Food Recalls and Alerts:

<http://www.avma.org/petfoodsafety/recalls/default.asp>

- Centers for Disease Control and Prevention Multistate Outbreak of Human Salmonella Infantis Infections Linked to Dry Dog Food:

<http://www.cdc.gov/salmonella/dog-food-05-12/index.html>

Third Annual World Rabies Day International Webinar



The Global Alliance for Rabies Control, in cooperation with the U.S. Centers for Disease Control and Prevention, is pleased to announce the 3rd Annual World Rabies Day Webinar to be held September 20-21, 2012. The Webinar brings together noted leaders in rabies research, One-Health advocates, professionals, students and World Rabies Day event planners in real-time to discuss the important public health issue of rabies while providing a forum for dialogue within and across disciplines.

The two-day event will focus on canine rabies elimination; human rabies surveillance, prevention and intervention; wildlife rabies control; information and education campaigns and building sustainable programs. Day 1 (Sept 20) of the Webinar will concentrate on presentations from Asia, the Middle East, Europe and Africa. Day 2 (Sept 21) will spotlight talks from North America, Latin America and the Caribbean Regions.

There is no cost to attend the live webinars but you must register in advance. Attendance is limited to the first 1000 registrants/logins. Space is limited – register early! To register, submit an abstract or learn about the Webinar, please visit <http://webinar.worldrabiesday.org>



World Rabies Day is an initiative of the Global Alliance for Rabies Control



Veterinary Services recognizes the importance of applying our unique animal health experience, expertise, and core capabilities in a more holistic approach to address these One Health issues

Veterinary Services, APHIS, USDA creates a new One Health Coordination Office

A permanent One Health Coordination Office has been established by USDA, Animal and Plant Health Inspection Services, Veterinary Services, after a year-long pilot. The office is now fully staffed and will support the U.S. and global One Health Initiatives. Veterinary Services has a rich history of applying veterinary public health principles to protect animal and public health, but these previous activities have primarily focused on specific program and livestock diseases such as brucellosis and tuberculosis. With the growing threat of emerging infectious diseases and ever-increasing interactions at the human-animal-environment interface, Veterinary Services recognizes the importance of applying our unique animal health experience, expertise, and core capabilities in a more holistic approach to address these One Health issues.

Led by Dr. Joe Anelli as the Director and Dr. Jane Rooney as the Assistant Director, the One Health Coordination Office (OHCO) will not only coordinate activities within VS, but also collaborate with other governmental and nongovernmental organizations within the US and across the globe on issues of mutual interest. These collaborations will leverage our expertise, reduce duplication of efforts, and build relationships in preparation for One Health events.

The VS One Health strategic plan has several goals including:

- Foster new collaborations and partnerships, and sustain existing relationships in the One Health community
- Spearhead outreach and communication to build credibility, trust and respect in the One Health community.
- Develop new skill sets to support and integrate One Health principles throughout APHIS' culture and workforce
- Apply our unique competencies to support and enhance the One Health community

These principles will be incorporated into the everyday activities of all VS employees as they engage with One Health partners to safeguard the health of animals, people and the environment.

Examples of areas in which Veterinary Services' is engaging in a more holistic collaborative, interdisciplinary approach to emerging infectious diseases and other issues at the animal-human-environment interface include:

- Outlining USDA's role, in partnership with other USDA agencies, in confronting the issue of antimicrobial resistance. This role will be focused in the areas of identifying research needs and surveillance.

One of the One Health Coordination Office's goals is to Foster new collaborations and partnerships, and sustain existing relationships in the One Health community.

- Continuing the voluntary national Swine Influenza Virus surveillance system, in collaboration with CDC and the swine industry. This includes monitoring the genetic evolution of endemic SIV to better understand endemic and emerging influenza virus ecology, making isolates available for research, establishing a data management system to facilitate genetic analysis of the isolates, supporting the development of relevant diagnostic reagents, assays and vaccine seed stock
- Improving the understanding of Q fever prevalence, diagnosis and control in the US through collaboration with state and federal animal and public health agencies.
- Collaborating within USDA to better understand the epidemiology of bovine cysticercosis and reduce its prevalence through interagency partnership and guidance for response to cases of bovine cysticercosis. It is hoped this will provide a template for future innovative One Health approaches to today's complex challenges.
- Reducing outbreaks of human Salmonella infections linked to live poultry by partnering with One Health collaborators and stakeholders.

The continued work of the OHCO can be followed at: http://www.aphis.usda.gov/animal_health/one_health/. The OHCO can also be contacted directly by email to VS.OHCO@aphis.usda.gov.

Both Drs. Anelli and Rooney are located in Washington D.C., while the rest of the OHCO staff are located either in Atlanta, GA or Fort Collins, CO.

Drs. Joe Anelli, Jane Rooney, Tom Gomez, Barbara Bischoff, and Tracey Lynn of the new One Health Coordination Office contributed this summary.

The World Veterinary Association and World Medical Association are preparing a Memorandum of Understanding to underline the importance of their collaboration

World Veterinary Association joins World Medical Association

On April 26 – 28, 2012 WVA Past President Dr. Tjeerd Jorna was invited to the meeting of the Council of the World Medical Association (WMA), which was held in Prague. The meeting, was attended by more than 100 WMA-Councilors coming from all corners of the world.

The presentation Dr. Jorna gave about WVA was well received. He also used the opportunity to highlight the need for close cooperation between medical doctors and veterinarians for achieving the "One Health" objectives.



WORLD VETERINARY
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One Health Newsletter

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WVA and WMA are preparing a Memorandum of Understanding to underline the importance of their collaboration.

American Academy of Pediatrics Endorses One Health



The American Academy of Pediatrics is a not-for-profit medical association of more than 60,000 member pediatricians in the United States and throughout the world. For more than 80 years, the Academy has devoted its energies and resources to the attainment of optimal health and well-being for all infants, children, adolescents, and young adults.

The Academy supports pediatricians, veterinarians, and other health care professionals in their efforts to prevent zoonotic disease transmission. It publishes pediatric guidance on minimizing the risk of exposure to animals in the home and to animals in public settings, and its policy is used in pediatric medical research and education worldwide.

The Academy has embraced the concept of the One Health initiative since 2008, supporting its aims to enhance interdisciplinary collaboration between human health, veterinary medical, and environmental professionals.

Call to Arms: a resource guide for One Health from the One Health Initiative team

Bruce Kaplan, DVM, Dipl. AVES (Hon)

One Health is more than a name...it represents an efficacious, economical approach to protecting and saving lives.

The tip of the iceberg of truth and proof in favor of One Health implementation has been documented on the One Health Initiative website and many other sources during the first decade of the 21st century and much of the previous century. The resources linked to below provide a strong case for a call to arms in support of One Health.

- People, Pathogens, and Our Planet—The Economics of One Health. Report prepared by staff from the World Bank. Provides economic justification for worldwide One Health implementation. <http://alturl.com/gfov6>.

One Health Newsletter

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- National League of Cities Adopts Resolution on One Health at the 2011 Congress of Cities. Provides evidence of the political viability of One Health. <http://alturl.com/tz5gx>.
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- ProMED Outbreak Reports on One Health topics. <http://www.onehealthinitiative.com/promed.php>.
- Practicing One Health for the Human Health Clinician (printed in full on page 2 of this issue). <http://www.onehealthinitiative.com/publications/Practicing%20One%20Health%20Human%20Health%20Care%20Providers%20April%202012.pdf>. Spanish language version also available.
- This quarterly newsletter, the One Health Newsletter. http://doh.state.fl.us/Environment/medicine/One_Health/OneHealth.html.

An additional PDF from the One Health Initiative on the justification of One Health implementation is available at: <http://alturl.com/gj55g>.



The One Health Newsletter is interested in publishing articles from a variety of view points and perspectives, and thus any opinions or statements made in the Newsletter's articles belong solely to the respective author(s), not the Editor, Editorial Board, or Newsletter Contributors.

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Coming Events

2nd International One Health Congress

“A world united against infectious diseases: cross-sectoral solutions”

Bangkok, Thailand

January 29-February 2, 2013

<http://www.pmaconference.mahidol.ac.th/>



International Wildlife Management Congress

Durban, South Africa

July 9-12, 2012

<http://www.iwmc2012.org/>

Medical Library Association Conference

“One Health: Information in an Interdependent World”

Boston, MA

May 3-8, 2013



<http://www.mlanet.org/am/am2013/>

Antigone One Health Course

Erasmus Medical Center, Netherlands

September 17-October 5, 2012

<https://www.molmed.nl/>

13th International Society for Veterinary Epidemiology and Economics Conference



Maastricht, Netherlands

August 20-24, 2012

<http://www.isvee13.org/>

Zoobiquity 2

“A Species-Spanning Approach to Medicine”

Los Angeles, CA

September 29, 2012

<http://www.onehealthinitiative.com/publications/Zoobiquity2%20brochure.pdf>

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Recent One Health Publications

The ecology of disease. Jim Robbins. New York Times. July 2012. http://www.nytimes.com/2012/07/15/sunday-review/the-ecology-of-disease.html?_r=1&hp

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USDA APHIS

Recent One Health Publications (continued)

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



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



doh.state.fl.us/Environment/medicine/One_Health/OneHealth.html

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